THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVIII. No. 426—21st YEAR.] LONDON, FEBRUARY 16, 1869. [Subscription per Ann. { 15s. in Advance / 18s. Credit.] DOUBLE No. Price 1s.

RAMSAY'S NEWCASTLE CANNEL
COAL. Analysis by Dr. FYFE, M.D.:—
9746 cubic feet of gas per ton of coal.
26-candle gas.
13¼ cwt. coke per ton of coal.
N.B.—Ramsay's Cannel most resembles the Marquis of Lothian's Cannel, but superior as to coke.
RAMSAY'S PATENT CONDENSED COKE,
DO. GARESFIELD COKE.

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FIRE-BRICK WORKS, established 1804.
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Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.
These Meters are warranted to measure correctly and not to vary, and have come into general use more rapidly than any Meters hitherto manufactured.

PARIS EXHIBITION, 1867.
THE TESTING-HOUSE REPORTS.
The Reports prepared for the Science and Art Department, under the direction of the Lords of the Council, detail the arrangements made for testing the gas apparatus exhibited. In the testing-house erected by the Special Committee appointed to further this object a gasholder was constructed by Mr. G. Glover, being a *fac simile* of that produced and patented by him in 1860, and deposited in the Exchequer, under the provisions of the Sales of Gas Act, and British manufacturers of gas apparatus were invited by advertisement, and by direct application, to forward worthy objects for exhibition. Mr. G. Glover was, however, the only manufacturer who sent Meters to be tested. The report states that, as "Mr. Glover is a manufacturer of Dry Meters only, no opportunity presented itself of comparing their accuracy with that of Wet Meters under various circumstances, but the perfection to which that maker has brought his Meters prevents the possibility of those extravagant errors which are well known to exist where Wet Meters are used."
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COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
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J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay are promptly executed at their Works as above.
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ALMA WORKS,
WALSALL, STAFFORDSHIRE;
and 69, UPPER THAMES STREET, LONDON,
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The Proprietors will, in future, use their own forms of bills of lading, and also issue certificates of origin, signed, as the case may be, either by JAMES FERGUSON & Co., or by the NITSHILL & LESMAHAGO COAL COMPANY; and they request all consumers purchasing Lesmahago Coal to demand such a certificate for each cargo, and to observe that it corresponds with the bill of lading.
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1867.

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MINUTE CLOCKS, PRESSURE GAUGES, PHOTOMETERS, PRESSURE REGISTERS, &c.

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TO CORRESPONDENTS.

W. M.'s *inquiry is answered in our "Circular to Gas Companies."*

Regtus.—*It is immaterial whether the air is blown through or drawn through purifiers to ventilate them. A copy of Palmer's specification may be obtained at the Patent Office, Southampton Buildings, Chancery Lane, London.*

A Gas Manager *complains of the non-return of the testimonials he sent in reply to an advertisement for a situation, having received in lieu thereof the following unsatisfactory letter:—"Sir,—The advertisement for employment you replied to under this company did not engage either to reply to any or all, neither did it engage to return testimonials, either original or copies, even when a stamp was enclosed for that purpose. All applications and enclosures, except the three from whom the final selection was made, were consigned to the waste-paper basket."*

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, FEBRUARY 16, 1869.

Notes upon Passing Events.

The question of the purchase of the telegraphs by Government has cropped up again in a very unpleasant shape. A certain class of party politicians, or, rather, certain politicians, are trying to reopen the question, on the ground that the late Government made a bad bargain with the telegraph companies, and therefore that it would be to the interest of the country to repudiate the contracts, and begin again. It might be fit, in arguing with a Spaniard, a Portuguese, or a Greek, to prove that a character for good faith is profitable to the possessor; it surely cannot be necessary with Englishmen. The bargain with the telegraph companies may have been too liberal or too extravagant, but cannot be reopened without consequences which would be extremely dear to the nation, even if a million of money were saved. The English Government stands in a peculiar position in the case of the purchase of public works. It never initiates any public work; seldom, if ever, makes any mechanical improvements in its own workshops; it waits until public opinion and public enterprise have forced improvement, and—as in the instance of iron ships, armour-plated ships, heavy and small arms—often reaps where ruined inventors have sown. It is impossible to calculate the advantage which this country has derived from waiting until private enterprise had tried its hand on canals, steam-engines, railroads, steam-driven tools and machinery, &c. For this reason, when the Government decides to take up the results of private enterprise, it is bound to treat the speculators, or the representatives of the original speculators, with liberality. It would, indeed, be a mistake if the present Government were to repudiate the bargains with the telegraph companies, while sustaining such doubtful slices of patronage as the Governor-Generalship of India. The French Government has lately carried out a reduction of telegram charges, and the occasion has been taken by a French reviewer to sketch the rise and progress of the telegraph system in France. Like the history of railways, it does not exhibit what the *Spectator* newspaper calls "*the scientific administration*" of France in a very favourable point of view. The possibility of employing electric currents, as a means of telegraphic communication, was first brought before the French Parliament on the 10th of May, 1841. The Government having applied for a vote towards aërial (or lantern) telegraphs, M. Léon de Malleville called the attention of the Chamber to the conclusive experiments already made in England by Mr. Wheatstone, and stoutly protested against the wasteful expense of establishing night telegraphs. This opposition produced no effect on the Government, which succeeded in obtaining a preliminary vote of 30,000 francs to experiment on lantern telegraphs, in spite of the protest of Arago, who declared that it was a waste of money to attempt to improve a system which, after the experiments made in England, could not compete with electric telegraphy. The argument successfully used was, that wires on posts or buried in tubes might be mischievously or maliciously destroyed. For two years and four months electric telegraphy was forgotten in France, and was only again revived when the Government applied for a further vote to complete the system of aërial telegraphs. At length M. Duchalet appointed a commission, which included Arago and Michel Chevalier, to investigate and report on electric telegraphs. This commission reported favourably, and recommended an immediate experiment on some railroad. This was accordingly made on the Paris and Rouen line, and opened on the 18th of May, 1845. At this period England, the United States, and Germany had adopted the new system. An application to the Chamber of Deputies for a vote to establish a line between Paris and Lille, was opposed by MM. Berryer and Mauguin, and no further attempt was made to press the subject on Parliament. Nothing was done in 1847 and 1848, and it was left to the Republican Government, in the latter

year, to sanction a telegraphic net, embracing some of the principal towns of France, on the recommendation of the celebrated astronomer, Le Verrier. It was under the Empire that the system assumed its present important dimensions. In 1868 there were 2276 telegraph stations, consisting of Government stations, municipal stations, railway stations, and semaphoric stations, which last are, we presume, those connected with the coast and marine signals. Through the central Paris stations pass 5000 telegrams sent or received, 1600 in transit, and 1400 local. The municipal stations are employed first in political and administrative business, but also for private telegrams. The telegraph office is established in every town-hall or other building employed by the municipality, under the charge of the secretary of the mayor, and the delivery of the telegrams is performed by the *concierge*, or some other officer of the same rank as one of our beadles. The telegraph offices at railway stations are not much used, because subject to inevitable delays; the railroad business having priority, and only one wire. Until January, 1865, the semaphoric electric lines were confined to official use. In that year they were united with the general system, and thrown open to the shipping interest of the country. This is only one example of the different way in which mechanical improvements travel in the two countries. In France the Government first adopts and then concedes to private enterprise. In England the Government slowly gives up oil lamps, hand-labour pulleys, and wooden signal stations, long after private individuals have adopted gas, hydraulic cranes, and the telegraph wire. The French telegraphic system is worked by a complete army of officials, divided in a very military manner. It is to be hoped that we shall not fall into the error of employing highly paid and discontented men, selected after a needlessly severe competition, when experience has proved that boys and girls can do most of the work quite as well, if not better. An elaborate system of promotion and pensions is much to be feared and avoided. France was the last country in which private persons were permitted to make use of the electric telegraph for business or pleasure. The merchants and manufacturers of England, the United States, Prussia, Holland, and Austria, were admitted to the use of the telegraph wire while the French were excluded—the privilege was reserved for the political and municipal government. The astronomer, Le Verrier, could not understand that any private demand for telegrams could ever arise. He said, in reply to a deputy who proposed to fix the price of a private telegram at two francs, "Monsieur Savoye completely mistakes the sort "of work which telegraphy will be called on to perform. It "will never, as Monsieur Savoye seems to imagine, be used "for domestic correspondence. The telegraph line will be "carried alongside the railway, and letters will be sent by "railway post. The telegraph will only be employed for "matters of great importance." In matters of common life even great philosophers are likely to be mistaken. The accomplished scholar and mathematician, Aldersen, could not see as far into the future of the railway system as the rough miner, George Stephenson—a reason why the opinions of academies of science are not to be accepted without discussion. Eleven years later the two-franc tariff was adopted without one opposing voice. In 1868 the Legislative Chamber unanimously decided that from November, 1869, the charge for a message not exceeding twenty words, from one office to another within the empire, should be *one franc*, and half a franc between two offices in the same department. The reviewer claims that this reduction of tariffs has brought the cost of telegrams in France below those of England, Prussia, and Russia. It does not clearly appear whether the cost of delivery is included in the uniform price. The writer of the article from which we have made our extracts concludes, in an eminently French spirit, by congratulating his country on having been able, within a very few years, to effect a reform in the telegraphic system, which will "avenge" (curious word) "the advantage England obtained "over us in the matter of postal reform." What vengeance has to do with penny post and tenpenny telegraphs, only a Frenchman bound to please his countrymen by claptrap can tell. Baron Esehasseraux, the reporter to the commission which recommended the reduction of tariffs, observes in his report: "On my visit to the central office of the telegraphic "system of France, I had the pleasure of seeing in action "feverish activity, united with perfect order and regularity;" on which the editor of the *Revue Contemporaine* remarks, in a note: "What a pity it is that this perfect order results in "delaying certain telegrams twenty-four hours, and sometimes "takes two hours to traverse 30 miles. There is ample room "for reform in our telegraphic administration. It is to be hoped "that, when the price of telegrams is reduced, messages sent "to the country may be forwarded with a little more de-"spatch"—a criticism which confirms a remark we have often made from personal experience—viz., that the high character French administration claims is greatly due to the absence of any means of making complaints public. Functionarism in France is with difficulty made responsible to law; it is entirely beyond the reach of public opinion, as represented in newspapers.

The case of *Saurin v. Starr*, however decided, is likely to revive the question whether convents, like poor lodging-houses, lunatic asylums, and gaols, should not be inspected; whether the governing powers of convents should not be compelled to keep a register of the state of health of the inmates. We submit these questions without the slightest idea of supporting interference with the religious arrangements of the Roman Catholics, or any other section of our religious communities; on the contrary, we see in the decision of the Middlesex magistrates and the Court of Aldermen—not to permit the only clerical persons to whom Roman Catholic prisoners will listen, free access and full scope for their religious observances and ceremonies—a manifestation of bigotry not only ignorant but stupid. These magistrates say: "We do not like the "Roman Catholic religion, and therefore we will not allow the "priests, to whom alone young unhardened Roman Catholic "prisoners will listen, the opportunity of performing divine "service, and the opportunity of privately exhorting the "criminals in an English gaol"—as if to make a bad Catholic was a step towards producing a good Protestant thief. But the disclosures made in the trial about the rules and customs of the Hull convent, show that the lodging-houses of paupers, the infirmaries of workhouses, and the ordinary lunatic asylums, do not, on the admissions of the patrons and superiors of convents, really want inspection more than these retreats, supposed to be devoted to the practice of all the Christian virtues. Let us take the most unfavourable view of Miss Saurin's case: let us admit that she borrowed or stole a pair of boots, in order to set off her feet to the best advantage before the Cardinal—that she reserved herself the best slice of toast and the best cup of tea when she presided over the breakfast—that she actually took tit-bits of bread and butter out of the pantry—that she talked to the school children and to priests, who were *externs* (that is, not nuns—a something in religious vocabulary equal in offensiveness to a Fanqui amongst Chinese or a Giaour amongst Mussulmans)—that she wrote to her uncle, a priest, "My very dear uncle," and sent letters to her mother surreptitiously when she found her correspondence intercepted both ways; let us admit that she was obstinate, untruthful as a schoolgirl, in terror of her schoolmistress, and altogether a very annoying person—is it right that any human being should be stripped nearly naked for punishment—deprived of sufficient clothing and sufficient bed-clothes—condemned to a vermin-infested blanket—fed on offensive, insufficient food—worried by constant surveillance in a manner that would drive a nervous delicate person (which Miss Saurin was not) mad—and finally be confined in one room, whether a cellar or an attic, under the constant guard of sentinel nuns—compelled, in one room, and in the presence of these spies, to obey all the calls of nature—not permitted even to answer the questions of a medical man out of the hearing of her religious watchwomen? We send inspectors into the poor class of lodging-houses, in order to see that the water-closets are in good working order, the rooms whitewashed and provided with a cubical space sufficient for the number occupying them; we send inspectors to gaols, to see that even the gravest criminals are not fed, clothed, or worked in a manner to injure their health; in lunatic asylums, besides inspection, we compel the managers and medical attendants to keep an exact record of every case of indisposition or of accident. Mrs. Starr, the defendant in this case, seems to be only a tyrant on a small scale, preferring the rules and customs of her order to common sense or common humanity. Conscientious as Torquemada, she has no hesitation in refusing the entreaty of a mother, that her daughter might visit a father sinking with a grievous disease. She thought "it would "unsettle Sister Scholastica." But let us suppose that Mrs. Starr was in temper like a fellow Yorkshirewoman, a religious Mrs. Squeers, vexed at a troublesome pupil or nun who did not pay—indeed, it seems that one of the grievances against Miss Saurin was that the Hull convent had received no portion

of her dowry—given that no correspondence with the external world was permitted, no letters to or from friends, no interviews except with minute-glass in hand in the presence of religious sentinels, confined in one room, ill fed, ill clad, with no appeal unless to a bishop with the peculiar notions of justice of the bishop to whom we have been introduced by this trial, with no Jesuit priest brother to take her part, how soon might a delicate, nervous, high-spirited girl be worried to death or madness? Throughout the inquiry we see the influence of the fear of the laws of assault and of libel. The Hull convent was a teaching and charitable institution, and therefore had intercourse with the outer world, however restricted. But there are also convents of *recluses*. At any rate, there is one near Birmingham, whose inmates, when once professed, give up all intercourse with acquaintance, friends, relations—even parents. They are literally dead to sister, brother, father, mother. Barefooted, clad in a single robe of serge, sleeping on a bundle of straw, they eat neither meat, butter, milk, nor eggs, but are kept alive on vegetables, chiefly haricot beans, and a portion of sour beer—the latter drink being essential to check the inclination to asthma produced by the vegetable diet. For the same reason, their couches are arranged in a half upright position. Of course, only the strongest constitutions survive this treatment; but as yet, thanks to the secret suppression of evidence system disclosed in the Hull convent trial, no coroner's inquest has been held on any Birmingham recluse. About two years ago a young girl, of delicate constitution, but very obstinate disposition, insisted on entering this convent at the instigation of her father, in spite of the opposition of her mother, both parents being zealous Roman Catholics. This girl, after being brought to death's door, was rescued by the courageous perseverance of her mother, who, as a final argument, threatened to have a coroner's inquest if her daughter died in the convent. By all means, pay Roman Catholic chaplains for gaols; give, in Ireland, grants for Roman Catholic churches and priests houses; render any assistance needed by destitute congregations; but do not let us abandon the most sacred principles of personal liberty, in deference to distorted ideas of religious toleration. A convent of recluses is a dirty social nuisance, and any other convent should be made to conform to the ordinary rules of sanitary laws. This Hull case gives us some idea of what took place in Italy and Austria, while the nuns and monks of those countries were beyond the pale of civil law—subject only to tribunals of priests not infected by the atmosphere of a free Protestant country.

The site of the law courts continues, and will continue, to be discussed until authoritatively settled by Parliament. The happy accident of a deficiency of funds will bring about a rehearing of the whole cause. It cannot be too often repeated, that to concentrate the whole of the courts and their offices in one huge mass on one site will be a huge mistake, and end in a disappointing, bewildering labyrinth. It will be not less a mistake to confide the work to one architect, or even to two. Where we have to deal with acres of architecture, the picturesque—or, to take the new word, the architeresque—will gain by a variety of styles and of treatment. The equity courts and their offices need not be cheek by jowl with the common law courts, and neither require immediate proximity to the Courts of Probate, Divorce, and Admiralty. Why should not two, three, or four eminent architects, already favourably distinguished in the competition for the Palace of Justice, be enlisted in the work, with each a block of ground for his own treatment? This would give more variety, but also make the supply of light, air, and access more easy. The passion for bigness which is not grandeur, and for uniformity which is monotony, is one of the vices of the age. Would Pall Mall be improved if all the club-houses had been designed by one architect? One central authority we certainly do need in the metropolis, to settle at once, and on some comprehensive plan, how far, if at all, the lines of buildings of our great thoroughfares should be set back as opportunity offers. Already a deputation has waited on the new First Commissioner of Works and Buildings, to protest against the viaduct which, if carried out, will for ever cut off the streets of the Strand from the use of the embankment road. Mr. Layard, in his usual reckless style, at once disowned a measure planned and supported by a Government of which he was a member, although not in the architectural and street improvement department. There is one excuse for the Metropolitan Board in yielding so tamely to the noble owners of Cecil and the other riverward streets between Charing Cross and Waterloo Bridge. The Board did try to make a grand improvement by cutting through that hideous barrack Northumberland House, but found no support in a House of Commons which, without hesitation, and properly too, cleared a large slice of St. Pancras parish, including a church and burial-ground, with many hundred houses and cottages. We only hope that Mr. Layard will keep his place long enough to make successful war on that—we will not say rotten, but very anomalous institution, the Woods and Forests—the most grasping and the most obstructive department of the Government. The Metropolitan Board desired, in answer to loudly expressed public opinion, to abate the dangerous block in the gut at the south end of Park Lane. First they proposed to go through Hamilton Place, and there they find themselves successfully resisted by the tenants of the Crown, backed by the Woods and Forests; then they turn to Park Lane, and find again a successful opponent in the Duke of Cambridge, in Gloucester House, and the Woods and Forests. If private enterprise wishes to turn a useless slice of mud and sand into something useful—an embankment, a pier, a dock—the Woods and Forests is there with a claim that could not be more extortionate if it were that of a subletting Jew in Skinner Street. The Woods and Forests is, in fact, an institution which exists partly to afford salaries to permanent commissioners, but still more to provide for solicitors and surveyors, not paid at the rate of the humble salaries enjoyed by the engineers, surveyors, and solicitors of London City, or the Metropolitan Board, or the docks or municipality of Liverpool, but enjoying incomes exceeding that of the Lord Chancellor or the Archbishop of Canterbury. For these salaries they do their best to stay all improvements by extortionate demands, occasionally indulging great people with slices of bargains, like Montague House or Carlton House Riding-School, and fill up their time with sales, purchases, and exchanges of landed estates, with all incidental profits of surveys and legal examinations, thus investing money which would be more properly and economically employed in public securities. These are the giants which it is to be hoped Mr. Layard's fiery spirit may lead him, as a new Jack, to fight, circumvent, and kill. Mr. Caird once undertook the job, and, although not strong enough for it, his facts and figures were so unanswerable that they helped to land him in the snug and suitable berth he now enjoys undisturbed by parliamentary contests.

What comical people the magistrates of Middlesex are! now patronizing the unlimited increase of public-houses—now respecting the vested interests of such accessories to prostitution as the Argyle Rooms, the Highbury Barn, and the Great Mogul—now sternly rejecting every application for new dancing licences—now making war against, and now by new constructions of the law encouraging, night-houses in the Haymarket—the last freak of the ultra-virtuous and Protestant body was to entertain the Duke of Wellington at a banquet, to celebrate his succession to the Lord-Lieutenancy of Middlesex. The duke, by his title, is a great personage, and very rich. He is also a very liberal contributor to charities and public objects. For the rest, his habits and tastes are notoriously of a character which would naturally make him most popular amongst characters who are only known to Mr. Pownall and his pious colleagues in their judicial capacity. The duke is one of the most good-natured and accessible of men, especially to good-looking women. Where Mr. Pownall could have lived to imagine that the duke would keep him, or any other man properly introduced, waiting on the door-mat, we cannot imagine. It must be admitted that dukes, unlike aldermen, are not bumptious or exclusive, but very happy to be amused and flattered by any one who is clean and decently dressed. Indeed, if the truth were known, they see very little difference socially between the Middlesex magistrate and the magistrate's clerk's clerk. To such eagles all men are mice, whether six feet or five feet in stature.

The *Times* publishes a tabular account of the charities of London, by Mr. G. M. Hicks, of immense value at the present time. It includes the most valuable, the harmless, and the positively mischievous. The total receipts from subscriptions exceed £312,000; from dividends, £160,000; from legacies, £139,000; from incidental sources, £254,000; and the total annual receipts exceed £2,000,000! This does not include the income of the great endowed hospitals or the City Livery charities.

Circular to Gas Companies.

We recently noticed a prevailing misconception as to the illegality of the use of unstamped meters after a certain date, which misconception we endeavoured to correct; nevertheless we continue to receive several inquiries on the subject, in consequence of a notice subsequently inserted in our advertising columns to the effect that, next year "the Sale of Gas Act "will come into general and universal operation, and will be "applicable to every meter in England, Scotland, and Ireland, "which will then be required to be stamped." The Sales of Gas Act, as passed in 1859, did, indeed, render it illegal for any gas company to fix or use any unstamped meter after Aug. 13, 1869; but the original Act was amended in 1860 by an Act which limits its operation to those counties and boroughs in which the local authorities therein indicated should have resolved to adopt it. The effect of the amending Act is to limit the operation of the Sales of Gas Act to the two counties (Gloucestershire and Carmarthenshire) and to the boroughs that adopted it within the prescribed period, and to leave the gas companies in all other counties and places free to continue to fix and use any meters they may think fit, stamped or unstamped. We have previously published a list of the boroughs in which the Act has been adopted, but in many of them it has hitherto been a dead letter, as no inspectors of meters have been appointed, nor have Exchequer stamps been obtained. Notwithstanding that neglect of the local authorities, the fixing and using of unstamped meters will become illegal in all such places after the 13th of October, 1870. Stamp No. 1 has been retained at the Exchequer Office as a standard, and 54 stamps for stamping meters, varying in numbers to distinguish each inspector's district, have been issued to the inspectors at the undermentioned places:—

2 Sheffield.
3 Aberdeen.
4 Lancaster.
5 Bristol.
6 Ashton-under-Lyne.
7 Wakefield.
8 London (City of).
9 Carlisle.
10 Middlesborough.
11 Edinburgh.
12 Exeter.
13 Liverpool.
14 Louth.
15 Oldham.
16 Leeds.
17 Staleybridge.
18 Cork.
19 Bolton.
20 Dublin.
21 Perth.
22 Portsmouth.
23 Birmingham.
24 Manchester.
25 Salford.
26 Newport (Mon.).
27 Perth. (?)
28 Metropolis (Western District).
29 Metropolis (Eastern District).
30 Metropolis (Southern District).
31 Dundee.
32 Lanark.
33 Ayr.
34 King's Lynn.
35 Greenock.
36 Rochester.
37 Bath.
38 Gloucester (County).
39 Metropolis.
40 Preston.
41 Hull.
42 Scarborough.
43 Wigan.
44 Yarmouth.
45 Kingston-on-Thames.
46 Blackburn.
47 Winchester.
48 Brighton.
49 York.
50 Lincoln.
51 Worcester.
52 Reading.
53 Bradford.
54 Glasgow.
55 Northampton.

Two deputations have waited upon the President of the Board of Trade on the subject of the gas supply of the metropolis, one of them being appointed by some of the metropolitan vestries and district boards, and the other by the gas companies. Of the proceedings of the former a brief report will be found in another column, from which it will be seen that the members did not—as Mr. Beal, the principal spokesman, expressed it—compose "quite a happy family," for while some of them advocated the purchase of the gas undertakings by the Metropolitan Board of Works, others objected strongly to entrusting that body with the manufacture and supply of gas, saying they had "rather bear the ills they have than fly "to others that they know not of;" intimating that the extravagant expenditure of the Board augured but a poor chance of economy in the supply of gas. Some members of the deputation were in favour of empowering the vestries individually or collectively to manufacture and supply gas; but that plan was objected to by others, who questioned the propriety of taking the supply of gas from the existing companies. The only point on which the members of the deputation seemed agreed was, that the price of gas should be reduced. One of the speakers said he was prepared to show that the advantage of the districting arrangements to the gas companies was equivalent to one shilling, or at least to ninepence, per 1000 feet of gas, and he contended that the public should participate in the advantage. That view of the matter we have on several occasions taken, when recommending the gas companies to deal liberally with the public, and practically it has been carried into effect by a general reduction of the price of gas in the metropolis. The economical advantage of districting would, indeed, have been more extensively experienced had Mr. Beal, and other members of the disunited family of agitators, not caused a wasteful expenditure of the revenues of the gas companies. It has been admitted by committees strongly adverse to the companies that they are entitled to divide 10 per cent. of their realized profits, and the real interests of the consumers of gas would be far better promoted by carrying fairly into effect the protective provisions of the Metropolis Gas Act than by squandering money, which must ultimately come out of the pockets of the gas consumers and the ratepayers, in attempting to overthrow an established arrangement. That the gas companies are not unwilling to afford all reasonable facilities for the protection of the interests of the public, has been shown by the introduction, into the Bills promoted by the Imperial and the South Metropolitan Companies, of the provisions of the City of London Gas Act of last session for the supervision of the management and the auditing of their accounts. Mr. Bright, who must have been much perplexed by the variety of opinions of those who offered to guide him into the right path, admitted his ignorance of the way, and, while thanking the deputation courteously for the information they had given, he dismissed them without any further pledge than that the question of the gas supply of London should receive the fullest consideration. Of the deputation from the gas companies we have received no report, but we understand that the President of the Board of Trade was equally reticent to them as to his intention to proceed with or to abandon the Bill of which his predecessor had given notice.

The accounts of the City of London Gas Company were presented to the shareholders at their last general meeting in the form prescribed by the official auditor appointed by the Board of Trade, in accordance with the City of London Gas Act of last session, and will be found on subsequent pages. They are so clear and intelligible, that any one who is in the least conversant with figures can readily ascertain the exact financial position of any gas company when the accounts are made out in such a form. Some persons may think the accounts are unnecessarily explicit and searching, and that the information they supply might be applied to illegitimate and inconvenient purposes; but in that feeling we do not participate, and we should be glad to see the same form adopted by all the metropolitan gas companies.

The average meter system for the supply of gas to street-lamps, in combination with self-acting regulators, continues to work most satisfactorily at Folkestone, where the average indicated consumption per lamp during the last quarter was 4962 cubic feet, the maximum consumption indicated by any meter being 358 feet above the average, and the minimum 352 feet below it. The greatest satisfaction is expressed by all parties at the admirable manner in which the town is now lighted, though some dissatisfaction is felt at the heavy expenses incurred by the Lighting Committee, which include £78 for new columns, meters, and lamps; £30 for photometrical apparatus; £321 7s. 8d. for charges by Mr. Hughes in connexion with experiments on the double tap; and other items, which make the total expenses amount to nearly £600. Mr. Hughes has handsomely agreed to refer his claim to arbitration, and the Corporation seem fully disposed to deal liberally with him.

At a recent general meeting of the Cambridge University and Town Gas Company, a dividend at the rate of 6 per cent. per annum was declared, notwithstanding a reduction in the price of gas from 4s. to 3s. 9d. per 1000 cubic feet, and the unusually heavy expenditure in law proceedings, and in renewals of mains and other parts of the works. It was also announced by the chairman that a compromise was in prospect with the new company, based on the purchase of the works of the latter, which would probably put an end to "the unseemly "and disagreeable contest" between them. He expressed an opinion that the powers possessed by the company under their existing Act would enable them to effect such a purchase without applying to Parliament for additional powers, and that, if the shareholders would authorize the directors to do it, they would proceed to negotiate without further communication with them. The opinion of the meeting was generally in favour of the proposition, and the chairman, when acknowledging the vote of thanks to him, at the conclusion of the meeting, said he trusted "that the terms of the compromise "would turn out to be satisfactory, but he could assure his

"brother shareholders that those who had brought the visi-
"tation of a nuisance upon them would not escape scot-free."

The recent fall of the sides of a brick tank at the Northampton Gas-Works should serve as a warning to engineers against building the vertical walls of such tanks too slightly to resist the pressure to which they may be subjected in treacherous ground. That was evidently the cause of the "collapse" of the tank at Northampton, and not the giving way of the foundation in the manner suggested in the local paper from which we have copied the paragraph briefly noticing the unfortunate destruction of the work.

A disastrous explosion of gas, which caused the death of a woman and two young children, occurred in Sun Street, Bishopsgate Street, on the evening of the 4th inst., owing to the escape of gas from a sliding pendant, which is the most dangerous kind of gas-fitting. The evaporation of the water in the hydraulic lute goes on imperceptibly, and it frequently happens that the smell of the escaping gas is the first indication that the requisite supply of water has been neglected. It may be desirable to suggest that such accidents would be much less frequent were a little oil poured on the water in the tube, by which means its rapid evaporation would be prevented.

Any contrivance which facilitates and economizes the use of gas for heating and cooking purposes deserves the encouragement of gas companies, and none that has come under our notice seems to effect that object so completely as Leoni's portable atmospheric heating and cooking gas-stoves, with which we have made some satisfactory experiments. One peculiarity of the apparatus is, that the processes of broiling and roasting are conducted by the reflection only of the heat, which method has great advantages over the direct application of the heat of a gas-flame. The apparatus was tried with great success at the Paris Exhibition, and the economical results, as recorded, were much in favour of the use of gas, independently of its other advantages. It is stated that a complete dinner for twelve persons was cooked in two hours, with a consumption of only 15 cubic feet of gas. These stoves have been found equally effective in heating apartments, and they produce no unpleasant sensation of closeness.

The means of disposing of coal tar is an important consideration to gas managers, and any new application of that substance becomes an object of interest. It is on that account, therefore, we mention an invention by M. Le Bœuf, a French chemist of some eminence, of an emulsion of coal tar, which is represented to be an energetic disinfectant, specially applicable to ulcerated wounds. Numerous cases are cited in which this preparation, called "coal-tar saponiné," has been most beneficial in its operation.

Miscellaneous News.

CAMBRIDGE WATER-WORKS COMPANY.

The Half-Yearly Meeting of the Shareholders of this Company was held on Friday, the 29th ult., at the Company's Offices, Bene't Street—the Rev. Dr. OKES in the chair.

The notice convening the present meeting, and also the minutes of the last meeting were read, and the latter signed. The seal was then affixed to the list of the shareholders.

The following reports were taken as read:—

DIRECTORS.

Your directors herewith transmit the statement of accounts for the past half year, which have been duly audited, and propose a dividend on the consolidated stock and amount of first and second calls on new shares for the half year ending Jan. 6, 1869, and on the amount of the third call from Oct. 6, 1868, at the rate of 8 per cent. per annum, to be paid on the 6th day of April next, free of income-tax. To pay the proposed dividend a sum of £106 1s. 9d. will be taken out of the suspense account.

The directors have to congratulate the shareholders upon the satisfactory state of the works and progress of the company's business, as shown in the manager's report.

The retiring directors, who are eligible for re-election, are the Rev. Dr. Okes, the Rev. Dr. Pulling, and Dr. Geldart. RICHD. OKES, Chairman.

MANAGER'S.

Gentlemen,—I have to report that during the past half year water from the company's works has been laid on to 379 premises (including Christ's and Sidney Sussex Colleges, and the Master's Second Court, Trinity College), the increased rental derivable from them being £284 per annum. The total number of premises now supplied is 4512.

The company's works are in a satisfactory state, the cooling ponds, &c., being now in full operation, and producing economical results, as anticipated.—I have, &c.,

HY. TOMLISON, Manager.

CAPITAL ACCOUNT.

On the capital account up to Jan. 6, 1869, after payment of expenses, there remained a balance of £47,867 18s. 11½d. On the revenue account for the half year ending Jan. 6, 1869, there had been received £2482 1s. 1d.; the expenditure was £1004 11s. 4d., leaving a balance available for dividend of £1477 9s. On the general balance account there was owing by the company £639 2s. 4d.

On the motion of the CHAIRMAN, seconded by C. E. BROWN, Esq., the reports were unanimously adopted.

Mr. C. E. BROWN, in moving the next resolution, said he was glad to see that the result of the half year's business of the company was of so satisfactory a character. The resolution was to the following effect:—"That a dividend on the consolidated stock and amount of first and second calls on new shares for the half year ending January the 6th, 1869, and on the amount of the third call for October, 1868, to January the 6th, 1869, be at the rate of 8 per cent. per annum, to be paid on the 6th of April next, free of income-tax."

Dr. FAWCETT seconded the motion, which was carried unanimously.

The retiring directors, Rev. Dr. Okes, Dr. Geldart, and Rev. Dr. Pulling, were unanimously re-elected, and the Rev. Dr. Okes was re-appointed chairman.

A vote of thanks having been accorded to the CHAIRMAN for presiding, that gentleman took the opportunity of passing a high eulogium on their manager (Mr. Tomlison) for the extremely able way in which he had conducted the affairs of the company. The directors were very much indebted to him for the great care he took in all transactions on behalf of the company. This excellent management on the part of Mr. Tomlison rendered his (the chairman's) duties anything but onerous.

Mr. FRENCH suggested that the half-yearly meetings should be convened at a different hour, but the mayor objected to this course, and the majority of the meeting being against the suggestion, Mr. French did not press it.

GAS LIGHTING AT CANTERBURY.

At the Quarterly Meeting of the Town Council, on Wednesday, Feb. 3—the MAYOR in the chair,

The TOWN-CLERK, in answer to a question, said that the annual outlay for gas supplied to the public lamps would be £1400 per year, against £1100 in the previous year.

A MEMBER of the court said that since the new meters had been put up there was a remarkable difference in the quantity of gas indicated to have been consumed, some lamps registering a consumption during a certain period each of 500 feet, and others of double that quantity.

Mr. RAYNER: The gas company did not wish to substitute meters for contracting. They did it to oblige the council.

Mr. MARTEN said it ought not to go forth to the public that the gas company now received £1400 a year for doing that which they did formerly for £1100, because the fact was, they went over a much more extended area than formerly.

Alderman AUSTIN said he believed when the gas and water company obtained their Act a provision was made that they should erect, at some part of the town, a test-meter, where any one could test the purity of the gas. The company had had this Act for about two years, but no meter had been erected, and he thought it right he should mention this. The gas was now so bad that people were obliged to burn candles as well as the gas, and he would move that the company be called upon to erect a test-meter, so that the public might test the purity of the gas, and if not found to come up to their contract, that the company be summoned.

Some discussion followed between Mr. RAYNER and other members of the court, the former gentleman asserting that the gas now made by the company was in quality according to that required by the Act.

Mr. CROW seconded the motion of Alderman Masters, which was carried.

CITY OF LONDON GASLIGHT AND COKE COMPANY.

The Half-Yearly General Meeting of the Proprietors of this Company was held at the Offices, Dorset Street, Salisbury Square, on Wednesday, Feb. 3—ROBERT ALEXANDER GRAY, Esq., in the chair.

The SECRETARY (Mr. Millar), having read the advertisement convening the meeting, the seal of the company was affixed to the register of proprietors, and the minutes of the last half-yearly meeting were read and confirmed. The following report of the board of directors, with the statements of account approved by the auditor appointed by the Board of Trade, were then presented:—

Dorset Street, Feb. 3, 1869.

Gentlemen,—The proceedings of your directors during the last half year furnish few matters to which it will be needful to direct especial attention.

The City Gas Act, to which reference was made in the last report, has, as to many of its provisions, come into operation; the illuminating power of the company's gas has been raised, a chief gas examiner has been appointed, as also three referees and a public auditor. These several appointments will involve the three companies supplying the City with gas in an annual expenditure of £2600, exclusive of office expenses, &c.

Pursuant also to the provisions of the Act, your directors are fitting up premises in Cannon Street for the permanent testing of the company's gas. Hitherto the testings have been carried on daily at the premises in Jewry Street, originally selected by the corporation, and it is gratifying to know that with one exceptional instance, and that a fractional one, the examiner has reported the company's gas to be in accordance with the parliamentary standard.

With reference to the accounts, your directors have to report that, as required by the Act, the company's books have, in addition to the examination of your auditors, been submitted to the public auditor, C. H. Parkes, Esq., for inspection, and it is satisfactory to know that, after minute investigation, the statements presented by your officers have been fully approved and confirmed by him, in conjunction with T. J. Nelson, Esq., the City solicitor, on behalf of the corporation.

With a view of ensuring uniformity in the financial statements of the several gas companies, the auditor has required that the accounts should be drawn up in a much more detailed form than heretofore, and in this form they are now submitted, and your directors need scarcely remark that their preparation has involved much additional labour. The accounts for the half year show a net profit of £13,166 2s. 3d., and which, added to the balance brought forward from the previous half year, leaves the amount at your disposal £14,149 8s. 5d., and out of this your directors recommend you to declare a dividend for the half year as follows—namely, on the A, and on the amount called up on the new shares, at the rate of 8 per cent. per annum; and on the B shares, in accordance with the company's Act, at the rate of 4 per cent. per annum, all to be paid free of income-tax.

Your directors regret the necessity for the reduction of the dividend, but the circumstances of the half year have been peculiar. Owing to the removal of the many buildings consequent on the improvements now in progress in the City, and the continued light weather, the rental for the half year is less by £1742 than the corresponding period of last year; and, owing to the mildness of the season, the residual products show a decrease of about £1000. In addition to these unfavourable circumstances, by the new arrangement of the accounts the working expenses of an additional week have been thrown upon the half year, by their being brought down to the 31st of December instead of the 24th; and further, there have to be added the continued heavy parliamentary expenses to which the company, in common with the other metropolitan companies, has been subject. The loss arising from the diminished rental will, doubtless, be recovered in the future, when the improvements referred to are completed.

Your directors have now to report that they have united with the directors of the Chartered Company in order to save time, and taken the preliminary step in accordance with the above referred-to Act, and presented a memorial to the Board of Trade for the amalgamation of the two companies. The scheme which has been presented with the memorial will, when returned from the Board of Trade, be submitted for your consideration and decision at a special meeting to be convened for that purpose.

In reference to the Thames Embankment, your directors have to report that since the last half-yearly meeting the Metropolitan Board of Works, by their contractor, have been progressing with the works in front of your premises, but there has been no settlement of the compensation to be paid to the company.

R. A. GRAY, Chairman.

THE CITY OF LONDON GASLIGHT AND COKE COMPANY,

Half Year ending December 31, 1868.

No. 1.—STATEMENT OF SHARE AND LOAN CAPITAL, *to December* 31, 1868.

Acts of Parliament authorizing the Raising of Capital.	Description of Capital.	Maximum Dividend authorized, or Interest paid.	Number of Shares issued.	Nominal Amount of Shares.	Called up per Share.	Total paid up.	Amount not called up.	Total Amounts authorized.
The City of London Gas Company's Act, 1859.	A shares.	£10 per cent.	10,000	£20 0 0	£20 0 0	£200,000	..	£200,000
	B shares.	4 ,,	10,000	10 0 0	10 0 0	100,000	..	100,000
	New shares.	10 ,,	8,000	10 0 0	10 0 0	80,000	..	—
	New sh., 2nd iss.	10 ,,	2,000	10 0 0	5 0 0	10,000	£10,000*	100,000
	Debenture bonds.	5 ,,	..	..	..	60,000	..	60,000
								£460,000

* Amount paid in advance of calls on new shares, 2nd issue, £6525.

No. 2.—CAPITAL ACCOUNT, *for the Half Year ending December* 31, 1868.

Dr. *Cr.*

Expenditure.	Expenditure from June 24, 1868.	Expended this Half Year.	Total to Dec. 31, 1868.	Receipts.	Certified Receipts to June 24, 1868.	Received during Half Year.	Total Receipts to Dec. 31, 1868.
	£ s. d.	£ s. d.	£ s. d		£ s. d.	£ s. d.	£ s. d.
To Expenditure to June 24, 1868	442,000 19 11			By Ordinary shares of £20 each	200,000 0 0	..	200,000 0 0
Less—				Ditto of £10 each	196,525 0 0	..	196,525 0 0
Amount received for removal of company's mains . £125 0 0				Bonds	60,000 0 0	..	60,000 0 0
Amount transferred to contingent-fund . . 2,550 15 8							
£2,675 15 8							
	2,675 15 8						
Since June 24, 1868—		..	439,325 4 3				
Property acquired, including law charges	..	..	—				
Buildings, manufacturing plant, storeage works, and other structures connected with manufacture	..	..	—				
New mains, including laying, paving, and other works connected with distribution	..	90 6 9	—				
Meters (additional), including fixing	..	..	—				
Parliamentary costs	..	365 0 0	—				
			455 6 9				
Interest on loans	..	..	—				
Special items (if any)	..	..	—				
Total expenditure			£ 439,780 11 0	Total			£ 456,525 0 0
Balance of capital account			16,744 9 0				
			£ 456,525 0 0				

No. 3.—REVENUE ACCOUNT, *for the Half Year ending December* 31, 1868.

Dr. *Cr.*

Expenditure.	£ s. d.	£ s. d.	Receipts.	£ s. d.	£ s. d.
To Manufacture of gas—			By Sale of gas—		
Coals, including carriage, trimming, and dues (*see* Account No. 6)	24,724 10 6		Common gas (217,819,500 cubic feet), at 4s. per 1000 cubic feet	43,563 18 1	
Purifying materials, water, &c.	469 19 10		Cannel gas (11,676,545 cubic feet), at 5s. 6d. per 1000 cubic feet	3,211 1 1	
Salaries of superintendents and officers at works	360 0 0		Public lighting and under contracts	2,161 17 6	
Wages at works (manufacture)	7,127 14 9			48,936 16 8	
Repairs and maintenance of works and plant, including renewal of retorts, machines, apparatus, materials, and labour	2,127 3 1		Less bad debts	295 1 2	
		34,809 8 2			48,641 15 6
Distribution of gas—			Rental of meters	Nil.	
Repair, maintenance, and renewal of mains and service-pipes, including materials, laying and paving, and labour	684 8 0		Sale of residual products—		
Less old material sold	67 13 4		Coke (Account No. 7)	6,352 1 1	
	616 14 8		Breeze ,,	139 5 8	
Salaries of inspectors, assistant inspectors, and clerks in Light Office	665 0 0		Tar ,,	1,334 9 9	
Wages	798 6 5		Ammoniacal liquor	992 3 1	
Meters—repairing, renewing, and refixing	1,869 1 4			8,817 19 7	
		3,949 2 5	Less bad debts	21 2 6	
Public lamps—					8,796 17 1
Lighting and repairing	..	558 7 1	Rents	..	187 0 0
Rents, rates, and taxes—			Transfer fees	..	2 11 0
Rents	626 6 8		Other items	..	—
Rates and taxes	838 7 10				
		1,464 14 6			
Management—					
Directors allowances	600 0 0				
Salaries of secretary, chief engineer, and office clerks	1,075 0 0				
Collectors commission or salaries	470 0 0				
Stationery, printing, and general establishment charges	513 19 0				
Company's auditors	54 12 0				
		2,713 11 0			
Public officers—					
(*Company's Proportion.*)					
Gas referees and their expenses	..	372 5 8			
Chief gas examiner					
Official auditor					
Law and parliamentary charges—					
Law	97 7 4				
Parliamentary (*oppositions*)	486 10 4				
		583 17 8			
Depreciation-fund for works on leasehold lands	..	—			
Other items—interest	..	10 14 10			
Total expenditure		£ 44,462 1 4	Total receipts		£ 57,628 3 7
Balance carried to net revenue account		13,166 2 3			
		£ 57,628 3 7			

Dr. No. 4.—NET REVENUE ACCOUNT, *for the Half Year ending December* 31, 1868. *Cr.*

	£ s. d.		£ s. d.	£ s. d.
To Interest on bonds accrued to Dec. 31, 1868	1,497 10 0	By Balance of net revenue, June 24, 1868	18,211 7 5	
Forfeitures incurred during the half year	None.	Less dividends declared for half year ending that day, including income-tax	15,730 11 3	
Insurance-fund, at per cent.	—			2,480 16 2
Balance of net revenue	14,149 8 5	Balance from revenue account, No. 3		13,166 2 3
		Interest on deposit		—
	£15,646 18 5			£15,646 18 5

Dr. No. 5.—INSURANCE-FUND ACCOUNT, *for the Half Year ending* *Cr.*
(The company have at present no insurance-fund.)

No. 6.—STATEMENT OF COALS CARBONIZED *during the Half Year ending December* 31, 1868.

Description of Coal.	In Store, June 24, 1868.	Received during Half Year.	Carbonized or used during Half Year.	In Store, Dec. 31, 1868.
	Tons.	Tons.	Tons.	Tons.
Common	4,212¼	29,390¼	24,540¼	9,062¼
Cannel	1,379¾	5,156¼	4,771¼	1,764¾

No. 7.—STATEMENT OF RESIDUAL PRODUCTS *made and disposed of during the Half Year ending December* 31, 1868.

Description of Residual.	In Store, June 24, 1868.	Made during Half Year.	Used in Manufacture during Half Year.	Sold during Half Year.	In Store, Dec. 31, 1868.
Coke—					
Common chaldrons.	70	24,540¼	10,085	14,803¼	100
Cannel ,,	10	3,578¾		3,205¼	5
Breeze ,,	5	2,058	..	1,963	100
Tar gallons.	6048	298,560	..	296,244	8424
Ammoniacal liquor butts.	89	5,814	..	5,598	305

Dr. GENERAL BALANCE-SHEET, *on December* 31, 1868. *Cr.*

	£ s. d.		£ s. d.	£ s. d.
To Capital account—		By Cash at bankers		4,255 18 0
Balance at credit thereof (Account No. 2)	16,744 9 0	Ditto petty		09 17 4
Net revenue account—		Ditto at interest		—
Balance at credit thereof (Account No. 4)	14,149 8 5	Stores on hand, viz.:—	£ s. d.	
Insurance-fund account—		Coals	8,902 17 9	
Balance at credit thereof (Account No. 5)	—	Coke and breeze	52 2 6	
Depreciation-fund (for works on leasehold lands)—		Tar and other products	73 9 9	
Balance at credit thereof (Account No.)	—	Sundry stores	1,770 14 10	
Contingent-fund—				10,799 4 10
Balance at credit thereof (Account No.)	2,809 14 7	Outstanding accounts due to company, viz.:—		
Unpaid dividends	1,032 2 1	Light account	37,076 15 5	
Interest accrued and unpaid on bonds, to Dec. 31, 1868	1,497 10 0	Coke and other residuals	4,796 1 7	
Amount due for coals and to sundry tradesmen and others	25,767 7 5	Sundry accounts	6,515 2 2	
Amount due for wages and contingencies, to Dec. 31, 1868	—			48,387 19 2
Deposits made by consumers	374 17 10	Special items (if any)		—
Special item—Mr. Benham's benevolent-fund	1,137 10 0			
	£63,512 19 4			£63,512 19 4

I certify that the balance of net revenue of the City of London Gas Company, for the half year ending Dec. 31, 1868, is £14,149 8s. 5d., and that such amount is applicable for the payment of dividend on the ordinary shares.

(Signed) JOHN THOMAS HADLAND, WILLIAM FORTESCUE, *Auditors of the City of London Gas Company.* (Signed) CHARLES H. PARKES, *Official Auditor.*

Feb. 2, 1869.

The CHAIRMAN: Gentlemen, it has been my usual practice on occasions of this kind to furnish you with as many details respecting the operations of the company during the previous half year as I have felt to be prudent and necessary. For I am free to confess that in my opinion it sometimes happens, in meetings of proprietors, many unnecessary details are asked for and obtained, which afterwards, being published, have too frequently been used as weapons against us. No doubt it is quite right and proper that you should have the fullest information of everything which occurs, but that information can always be obtained by going to the office, and I think that is by far the better plan of proceeding. Gentlemen, our progress during the past six months has been, we believe, under all the disadvantageous circumstances through which we have passed, highly satisfactory. It would, as you may well suppose, have been more gratifying to the directors, as it would necessarily be more pleasing to you, if we had felt ourselves justified, consistently with our duty, in giving you a better dividend. But I think the falling off in the rate of dividend on the present occasion has been most conclusively accounted for; and there is no doubt that, when the improvements in Holborn and the new street to the Mansion House are completed, there will be a considerable addition to our rental, exceeding in amount that which we have lost by the removal of the old premises in those portions of our district where these improvements are in course of being carried out. I therefore feel the greatest confidence in expressing the opinion that, at our next half-yearly meeting, we shall be able to pay you a better dividend than we are in a position to recommend to-day. The last half year was an exceptional one, and it left us about £3500 less, partly from the mode in which the accounts were made up; still, next half year, to some extent, you will have the benefit of that circumstance. Gentlemen, I need hardly tell you that the gas world is not yet in a settled state, and that, so far as the other metropolitan companies are concerned, there are measures in contemplation by the Government to enforce upon them similar provisions to those which were enacted in the last session of Parliament with reference to the City companies. Three of the gas companies are applying to Parliament for authority to raise fresh capital, and it seems highly probable that such permission will not be granted to them unless they come under the same arrangements and obligations which have been imposed upon us. As to the effect of those arrangements, it is not in our power to say much—the matter is yet in its infancy—but, so far as it has gone, I think, if worked out properly, it will not eventually prove disadvantageous to the companies, because one part of the arrangement is that, in the event of circumstances preventing the companies paying their 10 per cent., or as near as possible thereto, there will be a revision of the price at which gas is supplied. This is a most salutary provision; but it has always been a matter of astonishment to me that water and gas companies should be selected for proceedings so contrary to the general rule by which mercantile affairs of all kinds are carried on in this country. I cannot understand why we, who have embarked our capital on the faith of Acts of Parliament, should be exposed to these constant agitations. And pray, let me ask, who are the agitators? They are men who have not a shilling of their own invested in such undertakings. It is all very well for a man to call upon me to reform when he knows that, if successful, it will involve me in heavy loss, while he himself, in no case, can sustain any loss whatever. Within those necessary limits which ensure honesty and fair dealing, I think every man should be allowed to conduct his own business in his own way. No doubt the public ought to be protected, but the public are not entitled to unfair advantages, nor ought the public money to be expended in doing acts of injustice towards those who carry on large undertakings for the supply of their needs. That is not the mode in which our forefathers were wont to carry on their business, and it is not the mode which is likely to encourage commercial enterprises of this nature. Gentlemen, I believe I have very little more to say to you. The report informs you that we have consented to an amalgamation with the Chartered Gas Company. I have every reason to hope that that arrangement will turn out very satisfactory in its result; but nothing will be decided in the matter without the directors having the opportunity of taking the opinions of the proprietors; and of one thing you may be perfectly satisfied, that during the intermediate time nothing will be done by the directors but that which is calculated to advance the best interests of this company. As I said before, we should have been happy to give you a better dividend, but we must bend to circumstances, and after all a dividend of 8 per cent. is not a very bad one. The report very properly states that the carrying out of the plans of the Government, under the Act of last session, has involved us in much labour; but I think it is due to Mr. Parkes, who has been appointed to carry out the very onerous duty of official auditor, to say that no gentleman could have performed that duty in a more conciliatory spirit than he has done, and it is further due to him to say that in the very searching scrutiny which he made of our accounts, he caused us no unnecessary trouble. When I say that, I must add the expression of my firm conviction that he will not flinch in the least degree in the discharge of his duties, but will carry them out in the most strict and impartial spirit. We are much pleased that the Government have selected a gentleman of this description, otherwise it is easy to suppose that the gas companies affected by the Act of last session might be subjected to great annoyance without any benefit arising to the public. With these remarks I beg to move—

"That the half-yearly report with statements of account now read be received and adopted."

Mr. HADLAND (deputy-chairman) seconded the motion.

A PROPRIETOR: I should like to ask one question respecting the parliamentary expenses. Will you tell us whether the sum charged in the accounts now presented is the total expenditure incurred, or are we still indebted under this head, and, if so, whether the further expense is a large one?

Mr. WARD: Perhaps, as this is a matter which has just been before my

attention, I may be allowed to reply. The fact is that the whole of the parliamentary expenses during the past year, amounting to £1800, are paid. If that expenditure had been saved, it would more than have paid the 1 per cent. by which we have been obliged to reduce the dividend.

The PROPRIETOR: Then this item will not appear again?

Mr. WARD: No.

The CHAIRMAN: With reference to parliamentary expenses, it is really a curse to the country—a perfect disgrace; and I think if there is anything which more urgently calls for alternation and reform, it is the conduct of affairs before parliamentary committees. I cannot for the life of me understand why members of Parliament, who sit to inquire into the merits of schemes submitted to the Legislature, should not be called upon to give as many hours daily to the duty as gentlemen do who are summoned upon grand juries. Under the present arrangements the cost of a parliamentary investigation is something enormous, and what is most to be regretted is that, after all this expenditure, at the moment when one most stands in need of the presence of counsel, it is impossible to tell where to find them. I do hope that the present Parliament will correct all these abuses, which in the past have been attended with such serious loss to the companies. Since we have been engaged in this struggle, upwards of £100,000 have been expended in this way—in downright waste. If the public are anxious for a reduction in the price of gas, they ought to do all in their power to reduce the expenditure to which the companies are put, for in proportion as they reduce our expenses, the more surely will they hasten the time when we shall be in a position to meet their views in this respect.

Mr. WHITE: When is it proposed that the amalgamation with the Chartered Company shall take place?

The CHAIRMAN: It will not take place till 1870.

A PROPRIETOR: Shall you have to go to Parliament to give effect to it?

The CHAIRMAN: No; it rests with the Board of Trade to give official sanction to it. We are out of Parliament now, and I hope it will be a long time before we go there again.

The motion for the adoption of the report and accounts was then put, and carried unanimously.

Mr. LEWIS: The resolution which has been put into my hands is as follows:—

"That, agreeably to the recommendation contained in this day's report of the board of directors, a dividend out of the profits of the concern, for the half year ending the 31st of December last, be now declared as follows:—On the A, and on the amount called up on the new shares, at the rate of 8 per cent. per annum; and on the B shares, at the rate of 4 per cent. per annum; the whole to be paid, free of income-tax, at the company's office, on the first Tuesday in April next, and on each succeeding Tuesday and Friday, between the hours of twelve and one o'clock."

I have no doubt, sir, it would have been much more agreeable to the directors, as it would have been to the shareholders, if you were in a position to recommend the payment of 10 per cent. instead of 8 per cent.; but I think the reasons assigned by you, and in the report, for the diminution of dividend on this occasion, have been amply sufficient to account for it, so that although in one sense disappointed, we have nothing to complain of. We are all perfectly assured that, whatever diminution takes place, it cannot possibly arise from the fault of the gentlemen who sit at the board. We know that for years the attention given by our worthy chairman and his colleagues has been such as to ensure, under favourable circumstances, the utmost rate of dividend we are permitted to receive, and therefore it is no use grumbling at a diminution which has arisen from circumstances over which they nor we have any control. I have great pleasure in moving the adoption of this resolution.

Mr. LAVANCHY: I have the greatest satisfaction in seconding the motion, and in endorsing everything that has been said by my honourable friend the mover. We have had to pass through very troublous times, and have had much to contend with; I therefore think we owe a great deal to the directors, who have so admirably managed our affairs that, despite these adverse circumstances, they are able to pay us 8 per cent. I have no doubt that the prospects which the chairman has held out to us he has good reason to expect the realization of, and that next half year, if we do not reach to our former 10 per cent., we shall at least get half way.

The motion was put, and carried unanimously.

The CHAIRMAN: I have no doubt it has struck the proprietors generally, as it has struck me, as somewhat extraordinary, that our opponents are so suspicious of us that they must have inspectors to look after us. Well, if they think it necessary, the least they should do is to pay the expenses of such supervision. It would be a monstrous thing, if I had the misfortune to be lodged in a police-station on suspicion, that I should be called upon to pay the costs of being taken into custody.

Mr. WALMISLEY: I am sure the proprietors will most cordially concur in the motion I am about to submit. It is—

"That the best thanks of the shareholders are due, and are hereby presented to the chairman, deputy-chairman, and directors, for their unabated attention to promote the interests of the company."

I have had the pleasure to belong to this company for a great number of years, and during that time our chairman and the directors have furnished us with faithful reports of their proceedings, and I know that they have always given the most zealous attention to the carrying on of our business. I have no doubt that, though our position at present is a little changed, we shall return to our former prosperity next half year.

Mr. PHILLIPS seconded the motion, which was cordially and unanimously adopted.

The CHAIRMAN acknowledged the vote. He said: It is always very gratifying to gentlemen engaged in the management of any concern to find that their conduct meets the approval of their friends. We have seen many instances in which directors have not been so complimented. We fully appreciate your kindness, and trust we shall long deserve your confidence. There is one remark I may make in passing. Much has been said about the illuminating power of our gas. Under the recently passed Act of Parliament a very strict scrutiny of the quality of our gas has been made, and it is gratifying to know that during the last six months it has not been below the parliamentary standard save in one instance, and then the deficiency arose from an entirely exceptional circumstance.

Mr. LEWIS: I have now to move—

"That the cordial thanks of the meeting be presented to the auditors for their services during the last half year."

The labours of the auditors have latterly been increased very much, owing to the alterations necessitated by recent legislation, and therefore they deserve a special recognition of their services on this occasion.

Mr. WHITE seconded the motion, which was unanimously agreed to.

Mr. J. T. HADLAND acknowledged the vote for himself and Mr. Fortescue. He said: We have certainly had an increased amount of work thrown upon us this half year, but we have always great pleasure in the performance of our duties, and are much obliged to the proprietors for this expression of their approval.

Mr. WHITE: There is one gentleman connected with the company whose services must not be passed over in silence, and that is Mr. Millar, our excellent secretary. Those proprietors who are personally acquainted with Mr. Millar, and have known him, as I have done, for many years, will feel assured with me that while we have him as our secretary everything is pretty well sure to go right. I know that the directors as well as the proprietors at large have great confidence in him, and that they will concur in a vote of thanks to him. I am sure, too, that Mr. Millar will not be displeased if I include in my motion, "and the other officers of the company."

Mr. WALMISLEY seconded the motion.

The CHAIRMAN: The directors have had long experience of the zeal and ability of Mr. Millar, and of the other officers of the company, and they very cordially unite with the proprietors in offering them a vote of thanks. I have no hesitation in saying now, as I have said before, that there is no company in London, or within fifty miles of it, in which the business is carried on more satisfactorily to the directors or more beneficially to the proprietors at large. I think it due to Mr. Millar to make these few remarks in asking you to adopt the resolution now before you.

The motion was carried unanimously.

Mr. MILLAR: I am very much obliged to the shareholders for their favourable testimony to the services I have rendered to the company, and I am deeply indebted to you, Mr. Chairman, for the very courteous manner in which you presented the vote of thanks to the acceptance of the meeting. I certainly should have exceedingly regretted if it had not occurred to Mr. White to couple the other officers of the company with myself, for I can heartily respond to all that the chairman has said in their behalf. I believe that, for intelligence, zeal, and general efficiency, your officers are equal to those of any other company in the metropolis. With respect to the accounts, I may say that when the official auditor first came here some remark was made in his presence to the effect that we should be glad to listen to any suggestions for improvements, but I immediately said, "I cannot concede that point. Alterations may be made; but the accounts of the company will, I feel assured, bear comparison with those of any commercial undertaking in the metropolis." Those accounts were last week subjected to the most rigid examination by the official auditor, in the presence of the City solicitor, and they left the room perfectly satisfied, which the latter has amply testified in the report which the board have had. I think this will confirm the view which the chairman has expressed with regard to the conduct of your officers, and as I have not had anything to do with the accounts for a long time, I can do so on behalf of the book-keeper, who has been in the service of the company for many years. I thank you, gentlemen, for the many expressions of personal esteem which I have had from you, and after nearly fifty years service it is not a little gratification to be again and again so kindly spoken of.

On the motion of Mr. LEWIS, seconded by Mr. LAVANCHY, a cordial vote of thanks was given to Mr. Gray for his services in the chair.

The CHAIRMAN: Gentlemen, I cannot be insensible to these repeated acts of kindness on the part of my friends. I have been in the direction of this company ever since 1829, and during that time we have had many troubles to encounter which our predecessors knew nothing about. Happily, however, through the kind support of our proprietors, who have always taken things in good part, we have got through our difficulties without compromising our characters, although we have suffered some diminution of dividend. I trust as long as Providence spares me I shall enjoy your confidence, as I assure you I shall always study to deserve it; and I trust also that this company may enjoy many years of uninterrupted prosperity.

The proceedings then terminated.

METROPOLIS GAS SUPPLY.

DEPUTATION TO THE BOARD OF TRADE.

On Thursday last, Feb. 11, a deputation of delegates appointed by some of the metropolitan vestries and district boards waited upon the Right Hon. John Bright, President of the Board of Trade, to request that the Government would proceed with the bill, of which their predecessors in office had given notice, for regulating the supply of gas in London. Mr. Shaw Lefevre attended Mr. Bright, and the deputation was introduced by Mr. Dilke, M.P.

Mr. BEAL stated the object for which the interview had been sought, and urged upon the Board of Trade to proceed with the bill in the ensuing session, because the Imperial and other gas companies were about to ask Parliament for largely increased powers, including an increase of capital; and it was very undesirable that those powers should be granted. The delegates hoped the board would take up the whole matter of the supply of gas to the metropolis, and not allow individual legislation. As they opposed the gas companies, they felt bound to propose an alternative scheme, and therefore suggested that a similar power to that which was granted the City of London last year should be extended to all the vestries and district boards in the metropolis, unless some better plan could be proposed. The power asked for was, that the Metropolitan Board or the vestries, individually or collectively, might be permissively enabled to buy up the present gas companies or erect new works for the supply of their districts. They further felt it necessary to urge such a bill, because as the Imperial Company was, under the Metropolis Gas Act of 1860, bound to supply the whole of its district, the company had put in a claim for further capital, on the plea that the present capital was not sufficient to supply the plant, &c., for the district they were bound to supply. Other companies were making similar applications on the same grounds. The corporation of the City of London last year obtained powers, under certain circumstances, to buy up the gas companies, and the ultimate result of the legislation of 1868, in reference to the supply of gas in the City, was an arrangement by which gas of the illuminating power of 16 candles would shortly be supplied at 3s. 9d. per 1000 cubic feet. The reduction, it was calculated, would save the City £44,000 this year, and in the year 1870 the saving would be twice that amount.

Mr. LEFEVRE stated, as a member of the select committee of the House of Commons on the gas question last session, they were very much surprised the local authorities did not bring in a competitive scheme with the gas companies, and again this session he found there was no competitive scheme.

Mr. BEAL said neither the Metropolitan Board of Works nor the vestries had power to incur the expense of introducing such a bill; and, if they had done it, the members would have been rendered personally responsible. He proceeded to say that the recent attempted legislation on the part of the companies had cost the latter £100,000; it had also cost the City of London £20,000, and the other local authorities £20,000, the whole of which would eventually have to come out of the pockets of the gas consumers. The fact was also referred to, that in many towns better gas was being supplied at a much cheaper rate than in London.

Mr. BRIGHT inquired whether that was not in consequence of those towns being near the coal districts.

Mr. BEAL replied that it was not so, and that gas could be supplied cheaper

in London than any other place. In conclusion, Mr. Beal said the deputation were not quite a happy family on the question of giving the power of purchasing the gas-works to the Metropolitan Board of Works. Several of the representatives present thought the power ought not to be placed in the hands of that board, but ought to be vested in the local authorities.

Mr. BRIGHT said they might consider it very desirable to have gas cheaper, but it would be unreasonable to ask for it at such a price as to leave no dividend to the companies. The question was, what was a fair and reasonable price.

Mr. ELDRIDGE was prepared to show that the system of giving a district exclusively to one company was worth 1s., or at least 9d. per 1000 cubic feet. In other words, the Imperial, which supplied the district in which he lived, could supply gas at 3s. 6d. per 1000 cubic feet, and yet give the shareholders as good a dividend as under the old competitive system, because every one in the district was obliged to go to them for gas, and no bad debts were contracted through a struggle between two companies to obtain the customers. As a surveyor of pavements, he had known the company, under the old system, to spend the value of a year's gas at one house in endeavouring to get into the house first. He thought the consumers of gas ought to reap some of the benefits of the districting system, and that the gas companies ought not to gain all the advantage. With a threefold consumption, gas had, however, only been reduced from 4s. 6d. to 4s. per 1000 cubic feet. It necessarily followed that the companies had kept all the advantage. He could prove that, instead of dividing 6 per cent. or 7 per cent., they were dividing 15 per cent., and in many cases 20 per cent., on their paid-up capital.

Mr. SURRIDGE did not think he would be doing his duty to the vestry of St. Marylebone, of which he was one of the representatives, if he did not protest against the power being given to the Metropolitan Board of Works to purchase the gas-works of the metropolis. He believed the vestries of Marylebone, St. Pancras, and Paddington, which comprised the whole borough of Marylebone, were unanimous against such a proceeding. Sooner than that scheme should be carried out, they would continue to endure the grievances under which they were suffering; but they would suggest, as an alternative scheme, that the local authorities should be empowered to manufacture their own gas.

Mr. DRESSER ROGERS said he was a member of the corporation of the City of London and a member of the Metropolitan Board of Works, but he did not attend with the deputation in either capacity. He came as a representative of the parish of Camberwell. As an instance of the anomalies of the gas system, he stated that in one street on the south side of the river there were two companies, as one side of the street was in one district, and the other in another. Those on one side paid 3s. 2d. per 1000 cubic feet for 14-candle gas, whilst those on the other paid 4s. for 12-candle gas. Although the City of London had spent £20,000 in obtaining the power they had, yet, as they had saved £40,000 in the first year, he did not think they had any cause to regret their outlay. With respect to the Metropolitan Board of Works, he did not think that board was very anxious to obtain the power referred to, and even if it were given to them, they would not be bound to use it.

Mr. ROSS said they wished particularly to impress on the president that, sooner than any additional power should be given to the Metropolitan Board of Works, they would endure the ills they had. Their past experience of the expensive mode of carrying on business adopted by that board, and the way they increased the local rates, gave them a notion that if the board purchased the works of the gas companies, instead of decreasing the price of gas they would increase it. The Metropolitan Board was constituted in a very curious way, and did not seem to possess the confidence of the ratepayers generally. The deputation only wished the principles of free trade to be carried out. Railway companies, many public institutions, and the managers of the asylum at Leavesden manufactured their own gas, and they did not see why the local authorities should not be permitted to do the same.

Mr. BRIGHT referred to the probability of the metropolis being divided into municipalities, and asked whether the objection to the Metropolitan Board of Works having the gas supply under their control would apply to the new bodies.

Mr. ROSS said the establishment of municipalities would alter the case, and his views might not be the same as they were with reference to the Metropolitan Board of Works.

Mr. LANGHAM questioned the propriety of giving the power of making gas either to the Metropolitan Board or to the parishes.

Mr. BRIGHT asked if it would not be better to defer the discussion of the subject till the question of municipalities for the metropolis—in favour of which memorials had been received, signed by one-third of the inhabitants of the metropolis—had been settled.

Mr. BEAL objected to this proposal, that the question of municipalities had been under discussion since 1835, and might remain open a long while yet. Besides, many gentlemen present were opposed to municipalities, whilst they were all agreed as to the necessity of some action for obtaining better and cheaper gas.

Mr. BRIGHT said he felt he knew a great deal more of the subject than he did before he received the deputation, and he could assure them it would receive the fullest consideration from his colleagues and himself.

The deputation, after thanking the honourable gentleman for the courtesy with which he had received them, retired.

COURT OF COMMON COUNCIL—GUILDHALL, THURSDAY, FEB. 11.

At the Meeting of the Court this day—the Right Hon. the LORD MAYOR in the chair,

The Special Gas Committee brought up a report on a reference to them, on the 21st ult., to watch the progress of the Great Central Gas Company's bill in Parliament. The report stated that the Remembrancer had laid before the committee a copy of the said bill, which they had examined and found to contain clauses empowering the company to raise by shares an additional capital of £100,000, and to borrow the sum of £25,000. As the dividends on the shares and the interest on the borrowed money would become charges on the gas consumers of the City, the committee were of opinion that they should be empowered by the court to present a petition against the said bill, on behalf of the corporation, for the purpose of obtaining a *locus standi*, so that they might be enabled to appear before the committee of the House of Commons, with a view altogether to oppose the raising of such capital or to obtain a proper rate of dividend on the new capital, and generally to protect the interests of the consumers.

Mr. BONTEMS, in moving the adoption of the report, said the propriety of the suggestions it contained was so obvious that they did not call for any remarks from him. He would, therefore, at once move that the report be received, and referred back to the committee to carry into execution.

The motion was put and carried.

The REMEMBRANCER reported that he had received from the Board of Trade a scheme for the amalgamation of the City and Chartered Gas Companies, and he asked that the communication might be referred to the Special Gas Committee for consideration.

Mr. BONTEMS said it would also be necessary to empower the committee to take action thereon, as there would not be time to wait for another court.

The suggestions were agreed to.

The following notice appeared on the *agenda*, but in consequence of other business its consideration was postponed:—

"Report by Special Gas Committee upon the reference to reconsider the report relative to the appointment of a gas examiner of the City of London, and recommending that the salary should be £500 a year, and submitting the names of the following candidates for the appointment—viz., Charles Heisch, Esq., F.C.S., and John Whitmore, Esq., M.D. Also recommending that the Commissioners of Sewers be authorized to remunerate the gas examiner *pro tem.* for his services, at the rate of £200 per annum."

CATASTROPHE AT THE NORTHAMPTON GAS-WORKS.—In the morning of the 5th inst., about half-past eight o'clock, the new tank at the gas-works gave signs of collapsing, and soon after one of the piers gave way, and a huge section of the brickwork fell in with a tremendous crash. Other sections followed, and by the afternoon two-thirds of the structure had fallen in. The tank, which is 102 feet in diameter and 30 feet deep, has been finished about two months, and was to all appearance an admirably sound and solid work. Notwithstanding the care that was taken to secure a solid foundation, there seems some reason to suppose that, at the point where the wall first gave way, there was something of a quicksand beneath. The tank is in close proximity to the river, and in remote times the site must have formed part of the river bed.—*Northampton Mercury.*

DR. FRANKLAND'S ANALYSIS OF THE METROPOLITAN WATERS IN JANUARY, 1869.—"Royal College of Chemistry, Jan. 29, 1869.—Sir,—I have the honour to submit to you in the following table the results of the chemical examination of the waters supplied to the metropolis during the month of January. For the purpose of comparison I append also the results obtained from the waters supplied to the towns of Edinburgh, Glasgow, Newcastle, Manchester, Preston, and Lancaster, when submitted to the same analytical processes. The waters of the Southwark and Lambeth Companies were very turbid; those of the Grand Junction and Chelsea Companies slightly so. The sample drawn from the main of the East London Company contained much brown suspended matter, whilst the waters supplied by the West Middlesex, New River, and Kent Companies were perfectly clear and transparent. All the waters derived from the Thames were highly charged with nitrogenous organic matter. The organic nitrogen in the Southwark Company's water exceeded by 29 per cent. the maximum amount hitherto observed in any sample of Thames water delivered in London. On this account, as well as by reason of its great turbidity, the water was quite unfit for domestic use; it also contained an exceptionally large amount of ammonia. On account of its excessive turbidity, the Lambeth Company's water was also unfit for human consumption, without previous filtration.

Companies.	Date and Place of Collection.	Temperature in Centigrade Degrees.	Total Solid Impurity.	Organic Carbon.	Organic Nitrogen.	Ammonia.	Nitrogen, as Nitrates and Nitrites.	Total combined Nitrogen.	Previous Sewage Contamination (Estimated).	Chlorine.	Total Hardness.
Thames.											
Chelsea.....	Jan. 8—Cab Rank, Horse Guards ..	9·4	28·02	·458	·044	·001	·364	·409	3330	1·886	19·81
West Middlesex	Jan. 8—Cab Rank, Portland Road..	7·3	29·02	·377	·046	·002	·362	·410	3320	1·886	21·63
Southwark & Vauxhall..	Jan. 8—Cb. Rk. St. George's Ch., Bo.	8·3	30·84	·515	·080	·006	·337	·422	3100	1·886	20·11
Grand Junction.....	Jan. 8—Cab Rank, Woodstock St..	8·3	29·46	·384	·058	·002	·340	·400	3100	1·986	21·35
Lambeth....	Jan. 8—Cab Rank, Lambeth Road..	7·8	28·02	·414	·043	·002	·352	·397	3220	1·837	18·34
Other Sources											
New River...	Jan. 8—Cab Rank, Tottenham Ct. Rd.	7·2	30·7	·263	·036	·001	·464	·501	4330	1·688	21·65
East London.	Jan. 9 — Slater's, Old Ford Road .	9·4	35·0	·310	·036	·002	·578	·616	5480	2·085	23·05
Kent.....	Jan. 8 — Deptford Bdge. Police Stat.	11·7	41·0	·077	·013	·001	·399	·413	3680	2·433	29·26
Edinburgh Waters.											
Crawley Burn	Sept., 1868.		11·28	·187	·031	·001	·000	·032	0	1·042	6·1
Comiston Wr.			22·58	·085	·017	·001	·744	·762	7124	1·886	10·4
Swanston Wr.			12·70	·378	·059	·001	·000	·060	0	1·390	6·2
Colinton Wr.			14·10	·203	·042	·000	·000	·042	0	0·894	9·2
Newcastle...	September		23·40	·237	·062	·000	·000	·062	0	1·588	13·9
Loch Katrine	July, Glasgow....		3·0	·161	·011	·001	·000	·012	0	·905	0·3
Manchester..	June—Manchester		6·2	·183	·009	·006	·025	·039	0	1·117	3·7
Preston	August—Preston .		12·44	·236	·031	·006	·000	·036	0	1·590	8·9
Lancaster ...	Nov.—Lancaster..		4·58	·129	·022	·001	·000	·023	0	·990	·9
Column 1	2	3	4	5	6	7	8	9	10	11	12

The numbers in columns 4, 5, 6, 7, 8, 9, 10, 11, and 12 all relate to 100,000 parts of the waters. The table is to be read thus: The Chelsea Company's water collected on Jan. 8, at the Horse Guards cab rank, had a temperature of 9·4° Cent.; 100,000 lbs. of it contained 28·02 lbs. of solid impurity; the organic matter, constituting a portion of this impurity, contained ·458 lb. of carbon and ·044 lb. of nitrogen. This solid impurity also contained ·364 lb. of nitrogen in the form of nitrates and nitrites, besides ·001 lb. of ammonia whilst the total amount of *combined* nitrogen in every form was ·409 lb. The above quantity of water supplied by the Chelsea Company had been, after its descent to the earth as rain, contaminated with sewage or manure matter equivalent to 3330 lbs. of average filtered London sewage. By gradual oxidation, partly in the pores of the soil, partly in the Thames and its tributaries, and partly in the reservoirs, filters, and conduits of the company, this sewage contamination had been converted into innocuous inorganic compounds before its delivery to consumers. Finally, 100,000 lbs. of the Chelsea Company's water contained 19·81 lbs. of carbonate of lime, or an equivalent quantity of other soap-destroying ingredients.—I have, &c., E. FRANKLAND.—The Registrar-General, &c."

CAMBRIDGE UNIVERSITY AND TOWN GASLIGHT COMPANY.

The General Half-Yearly Meeting of the above-mentioned Company was held on Thursday, the 28th ult., at the Company's Offices, in Sidney Street—Dr. PHELPS, chairman of the company, presided.

After the usual preliminaries, the reports, of which abstracts follow, were submitted:—

REPORT OF THE DIRECTORS.

The directors herewith submit to the shareholders a statement of accounts for the half year ending Christmas, 1868, which accounts have been duly audited.

It will be observed that the profit and loss account for the half year exhibits a balance of only £602 14s. 2½d., an amount the smallness of which may be accounted for partly by the reduction of price from 4s. to 3s. 9d. per 1000 feet, and partly by unusual expenditure in renewals of mains and other apparatus, and in law charges.

It will be remembered, however, that, in view of all these contingencies, the shareholders prudently submitted to a reduced dividend at Midsummer last, and a sum of £720 2s. 2d. was reserved.

Having regard to this reserve and the general prospects of the company's business, the directors recommend a dividend of 6 per cent. per annum on the consolidated stock, and on the paid-up new share capital.

It will be observed that the sum of £178 10s. has been paid out of the revenue account for capital purposes, and the directors find it necessary to make a call on the new shares, of which due notice will be given.

The directors report to the shareholders that the limited company's appeal to the Lords Justices (abortive as such appeal has proved, so far as any benefit to the limited company is concerned) resulted in November last in the discharge of the injunction granted so happily for the peace of the town and the comfort of its inhabitants, by his honour the Vice-Chancellor Malins, in July, 1868.

Upon the result of the appeal becoming known to the directors, they carefully considered what course it would be best to pursue under the view expressed by the Lords Justices, whose decree, reversing the injunction, as the directors were advised, had been grounded chiefly upon the authority of a case in which, under circumstances very similar to those in the present instance, an injunction had been refused by a court of equal jurisdiction. And inasmuch as, even in this last-mentioned case, the judges had differed in opinion as to the propriety of granting or refusing an injunction, the board, acting under counsel's advice, directed the necessary steps to be taken to have the question in dispute between their company and the limited company decided by the House of Lords, to whose authority, it need scarcely be added, all other legal decisions are subject. Upon the question of costs, the directors have been informed by their solicitors that, from the course adopted by the Lords Justices in not allowing any expenses of so much of the appeal of the limited company as to which they were successful, and in ordering the limited company to pay so much of the costs of their appeal as to which the limited company were unsuccessful, the benefit to the limited company will not be increased to any appreciable extent, so far as legal expenses are concerned.

The directors cannot dismiss the subject without pointing out to the shareholders that the results arising from the vigorous action taken to secure the highways of the town from an invasion, the nature of which, as counsel have advised the board, has been declared illegal by every court in the kingdom before which the question has at any time been brought for decision, have been hitherto such as to leave the directors no cause for dissatisfaction, and it is their intention, if supported by the shareholders, not to relax their efforts to prevent the threatened evil of having two lines of mains running through the length and breadth of the town (an absurdity palpable in itself) from becoming a permanent infliction.

(Signed) ROBERT PHELPS, Chairman.

THE ENGINEER'S REPORT TO THE DIRECTORS.

30, *Great George Street, Westminster, Jan.* 22, 1869.

Gentlemen,—I have to report that, in the course of the past half year, the enlargements and extensions of the main-pipes referred to in my previous report have been completed, and that the distribution of the gas is perfectly satisfactory in regard to both its quantity and the sufficiency of its pressure.

The new gasholder has proved to be efficient in all respects, and has been of much service in facilitating and regulating the increased supply of gas demanded from your works. This increased supply has, in consequence, been afforded without difficulty, and without any additions having been found necessary in other portions of the manufacturing plant.

In the illuminating power, purity, and pressure of the gas, the company has more than complied with the obligations imposed by the Legislature.—I am, &c.,

T. HAWKSLEY.

THE MANAGER'S REPORT TO THE DIRECTORS.

Mains.—Considerable enlargement and extension of mains, referred to in my report of January, 1868, has been made, and the pressure has consequently been greatly increased, and is now ample in the remotest districts from the works.

Gas and Meter Rental.—I find, upon comparing the gas and meter rental with the corresponding half year, that it has fallen off £61 17s., notwithstanding there has been a large increased expenditure of coal in obtaining this result. This has arisen partly from the reduction of 3d. per 1000 feet in the price of gas, and from other causes to which I need not now refer.

Coke.—The coke trade has been very brisk during the last two months, owing to the price having been reduced to all purchasers, which has had the effect of clearing off the whole of your old stock and make for the half year with the exception of about one hundred chaldrons.

Fittings.—The fitting trade has been satisfactory.

Sulphate of Ammonia and Tar.—The sale of sulphate of ammonia and tar exceeds that of the corresponding half year by £179.—I am, &c., F. G. GIFFORD.

CAPITAL ACCOUNT.

Dr.				*Cr.*		
To Consolidated stock			£37,440 0 0	By Expenditure on capital account, to Midsummer, 1868		£45,285 14 11
New shares—first call of £2 on 1160 shares			2,320 0 0	Ditto ditto, since ditto		3,740 13 0
Loan, Midsummer, 1868	£8,000 0 0			Balance		2 3 0
Ditto	1,268 10 11					
		9,268 10 11				
		£49,028 10 11				£49,028 10 11

PROFIT AND LOSS, *for Half Year ending Christmas*, 1868.

Dr.				*Cr.*		
To Manufacture—				By Gas—		
Coals		£4,368 1 8		Sale of gas and meter-rents		£6,641 14 0½
Coke, Midsummer, 1868	£208 17 0			Residual products		1,948 16 2½
Meters	645 17 0			Stock		1,393 12 0
	854 14 0			Fittings		1,512 3 11½
Supervision and labour	992 18 6½			Lime		25 15 0
Trade accounts	£550 10 5			Rents of cottages		6 3 2½
Paid out of revenue on capital account	178 10 0	672 0 5½		Sundries		33 12 10
		6,887 14 8				
Distribution—						
Wages	£525 9 10					
Trade accounts	729 0 2					
		1,254 10 0				
Rent		40 0 0				
Rates and taxes		374 9 8				
Law charges		502 8 0				
Interest		197 15 9				
Fittings		1,159 2 1½				
Lime		16 17 6½				
Miscellaneous		484 0 7½				
Bad debts and allowances		42 4 8½				
Balance		602 14 2½				
		£11,561 17 3				£11,561 17 3

GENERAL BALANCE.

Dr.				*Cr.*		
To Capital account		£2 3 0		By Amount owing for gas		£5,368 12 3
Revenue account		602 14 2½		Ditto for products		1,915 18 5½
Floating assets, Midsummer, 1868	£4,091 8 8			Stock in hand		1,821 7 5
Balance of revenue account, Midsummer, 1868	£1,900 18 2			Manager's balance		1 2 6
Less dividend paid August 1, 1868	1,880 16 0			Bank balance—capital account		3 3 0
		720 2 2				
		4,811 10 10				
Amount due to bankers		3,692 15 7				
		£9,109 3 7½				£9,109 3 7½

The CHAIRMAN, in moving the adoption of the reports, and that they be entered on the minutes, pointed out that there was a slight clerical error in the accounts, under the head of profit and loss, a sum of £178 10s. having been charged to trade accounts, whereas it ought to have been debited to manufacture. That, however, would not affect the general balance.

Mr. S. PEED seconded the motion.

Mr. GOTOBED said the proprietors could not fail to be struck with the very large increase in the item of coal alluded to by Mr. Gifford. In this item, as compared with the corresponding period of last year, there was a rise of 18 per cent., or 3s. 7d. in every pound. He was aware that this was partially explained by the fact that they had, practically, manufactured more gas—in fact, 5 per cent. more—but then, in such manufacture, they had spent 18 per cent. more in coal. The expenditure for coals in the half year to Christmas, 1867, was £3135; this half year it was £3694, showing an increase of £559, or, as he had said, 3s. 7d. in the pound.

The CHAIRMAN said Mr. Gotobed should bear in mind that they were now bound to supply gas of 14-candle illuminating power, and that, therefore, they required a different article in coal. The contract price would not, therefore, be the same.

Mr. PEED said the price for cannel coal was very much dearer.

A SHAREHOLDER: And is rising every day.

Mr. FETCH said there was an increase in manufacturing and trade accounts of nearly £300.

The CHAIRMAN replied that that was easily accounted for by the renewal of mains, &c.

Mr. FETCH referred to the fact of the balance-sheet showing a debit of nearly £4000 to the treasurer, in addition to the loan.

Mr. G. E. FOSTER (treasurer) said the debt was now only £561 10s. 2d., having been met, he believed, very nearly out of the ordinary receipts of the company.

Mr. FETCH then said he should like to know what "floating assets" meant.

The CHAIRMAN: Undivided profits.

After some conversation as to the accounts, in the course of which it was pointed out that many items of expense were of an extraordinary character, and not likely to occur again,

Dr. FAWCETT said he deeply regretted that the moderate counsel he had ventured to address to the board a year ago had not been adopted, and he could not yet understand why the direction then refused to meet the commissioners by a reduction of £130 a year, and almost immediately afterwards, by a reduction of gas to private consumers, sacrificed £300 or £400 a year. When he suggested that they should meet the commissioners half way, or sacrifice the whole, it was said that, if that were done, the private consumers would call for a reduction also. He would rather light the town lamps for nothing than there should be an adverse company.

The CHAIRMAN: And so would I.

Dr. FAWCETT: But it was not done.

The CHAIRMAN: No; because it was not believed that any company could carry out such an abominable project.

Dr. FAWCETT said he had great hopes of the future, as, notwithstanding law expenses, the great opposition, and other drawbacks, they were able to pay 6 per cent.; indeed, he thought they might have paid a little more. He regretted that the directors had not thought it necessary to take notice of the long statement which had been circulated with the petition or memorial lately carried about, and signed "J. H. Turner." He wished the directors had answered it at once; he thought the report of that day was a complete answer to it, but he should have preferred its having been met at the time.

Mr. S. Peed said that the £130 a year of Dr. Fawcett would have amounted in all to £1850; but he must say he was surprised when the directors reduced the price of gas to private consumers from 4s. to 3s. 9d. per 1000. It was his opinion, taking into consideration the trouble and expense they had been at, that they should have adhered to the maximum price under their Act of Parliament, and even out of the mouths of their opponents it had been proved that 4s. was a reasonable price. He was at the same time sure that the directors had acted after all due consideration, and were pre-eminently worthy of the thanks of the shareholders. With reference to Mr. Turner's production, he and many others really considered that the better way was to take no notice of Mr. Turner and his party; and they thought, too, that the more the latter got to sign a statement of that kind, full of absurdities and falsehoods as it was, the more for the advantage of this company before a committee of the House of Commons. He believed that at that moment they were in a satisfactory and flourishing state, that they had got over the difficulties under which they had laboured for some time, and that in the future they might confidently expect many improvements.

Mr. Pemberton said he very seldom attended meetings of, though he had a very considerable interest in, the company. On the present occasion he was there with but one motive. Owing to fatal experience he had a great dread of law, and the consequences that followed even upon a successful suit. He was not conversant with the subject in all its bearings, but he knew enough of it to enable him to perceive that they were not yet out of the wood. The question was, whether it was not now desirable to come to some compromise, and put an end to further litigation. All they had at present done they had done successfully, it was true, but from what they knew of the opposition company, he thought that the litigation might still be carried on. The directors had advocated a policy of reserve, that they should not give away all they earned, and he feared they would still have to pursue that policy if a compromise was not come to. If they made efforts to bring such compromise about, even though it were not successful, they would go to court in a far higher and more satisfactory position, and show to the court and the public that they stood forward as honourable and straightforward men of business. He most honestly and earnestly pressed on the direction the importance of gravely considering that question. The town of Cambridge was disturbed now by this and other quarrels, some arising from party animosity. Let them at least withdraw this if they could, and so the peace of the town would be disturbed the less. The directors should, he thought, take it into consideration, and show that they were not desirous of entering into or prolonging litigation.

The motion for the adoption of the report was put, and carried unanimously.

The Chairman said, with regard to the remarks that had fallen from Major Pemberton, he concurred most entirely, for he wished that this most unseemly and disagreeable contest would come to an end. He had pleasure in telling the shareholders that such a compromise was on foot, and the terms of it were such as the directors could willingly consent to and approve—terms, too, that he was sure they had power to carry out. In the main the terms were the purchase of the property in the possession of the limited company. It was considered that the existing company had power to do that under existing Acts, and if the shareholders would authorize the directory to do it, they would proceed without any further communication with them beyond sending them a statement of their reasons and a vindication of what they had done. He was glad to find that the shareholders generally agreed in his views. His object was, first, to save the town from the intolerable nuisance that would arise from having two companies; secondly, to conserve the intersts of the existing company; and thirdly, not to keep ill-feeling alive; but he had a great horror of wrong-doing, and so he had, he thought consistently, objected to the payment of the expenses of those who had initiated the wrong-doing. The reason that he had so objected was patent; it would only have been really saying to others, "You come forward, and we shall do the same." He had acted on principle, for though it might only have cost this company two, three, or four hundred pounds, he would rather personally have sacrificed ten years dividends than have agreed to it; but when it was proved, at last, that although this company would have to make some sacrifice, their opponents would have to pay the penalty, he was willing to do that, so as to spare the town and the ratepayers generally any further expense, and free them from what he had all along felt to be a great evil. The directors would carry out a compromise that would effect all the benefits suggested, if the shareholders would authorize them to do so, trusting the board, and feeling that the company would not, by reason of the action to be taken by the board, make too great a sacrifice to do so.

Mr. Fetch would like to have the clause pointed out whereunder the proposed arrangement could be come to.

The Chairman replied that the company had power to purchase all lands required for the purposes of the company.

Mr. Fetch: That has been already done.

Mr. Peed: No; the company has power to buy additional lands.

Mr. Fetch said, however that might be, no one had previously condemned the course now proposed more than Mr. Adams.

The Chairman: But that was under different circumstances. Then it was understood that the existing company was to pay all the expenses of the new company. Now it was only proposed to buy their actual property.

Mr. Fetch: Yes, and perhaps for ten times as much as it is worth.

Dr. Cartmell begged to express his own feeling, and he was sure that he was expressing that of the majority of the shareholders, when he said that the matter of the compromise had better be left to the directors. He, for one, was convinced that the directors would do the best that they could for the shareholders. It was obvious that this compromise—at least the terms of it—must involve many delicate points, and as now he hoped and trusted the matter was drawing to a conclusion, nothing should be introduced that involved a matter of temper. They should not look back, but address themselves to the matter in the purest and driest business feeling. They would gain nothing by retrospection, or by irritating the feelings of others. He would most strongly urge that the terms of any arrangement to be come to be left to the directors to arrange, and would further advise that the interests of the company were safe in their hands.

Mr. H. H. Harris quite agreed with all that had fallen from Dr. Cartmell, and hoped that the shareholders would leave all power to effect a compromise in the hands of the directors. It was "better to bear the ills we have, than fly to others that we know not of."

Dr. Fawcett said that if Dr. Cartmell would embody his expressions in a resolution he (Dr. Fawcett) would be very happy to second it.

The Chairman thought that such a course would be hardly regular, as no notice had been given. What he on the part of the directors wanted was, to ascertain the feeling of the meeting.

Mr. Fetch asked whether the secretary would mention the clause in the Act under which the proposed compromise could be come to.

The Chairman replied that there could be no doubt the company had power to buy materials, works, pipes, &c., according to the 90th section of the 8th Vict., cap. 16.

Mr. Pemberton said he was delighted to hear what had fallen from the chairman, and he would only venture to suggest, on the part of the shareholders, whether it was not worth while to call a special general meeting during the "compromise" or "arrangement."

The Chairman replied that there would be no time to call a special meeting, inasmuch as they were bound to appear on Standing Orders on the following Wednesday week next. Every day would add to the legal expenses, and that was partly the reason for the course adopted by the directors.

Mr. S. Peed thought that, inasmuch as the directors had recommended a dividend of 6 per cent. with the expectation of continued litigation, now that there was a fair expectation of cessation of litigation, a dividend of 7 per cent. could safely be declared, and he should propose that that be so.

Mr. J. Bonnett seconded the proposition.

Mr. Gotobed had no doubt that the directors had full power to carry out any compromise or arrangement, but, even if they had not, he hoped no shareholder would object to the granting such power—a power which he thought would clearly turn out in its exercise to be eminently for the benefit of the shareholders generally. He thought that anybody opposing the proposed arrangement would not have a very pleasurable feeling in after years. With regard to the dividend, he would advise that they should adhere to the recommendation of the directors, and keep to 6 per cent., because, though they knew what they had paid, they did not yet know what they might be called upon to pay. There might probably be some heavy expenses in Chancery.

Mr. S. Peed: They will not be much.

Mr. Gotobed feared they would be a good deal, but, whatever it was, he should advise that they stood by the recommendation of the directors. It was clear that they had not this year earned enough to pay 3 per cent. on the whole, and so it would be most safe to adhere to the advice of the directors, and declare a 6 per cent. dividend only.

Dr. Adams (a director) said it was the extraordinary outlay that had reduced the earnings in the shape of interest to 3 per cent.—outlays that would not possibly occur again. Striking the average, taking into consideration the possession of stock, &c., the real earnings were over 10 per cent.

Mr. S. Peed observed that, if the opposition bill was withdrawn now, the costs could not be much.

Mr. T. Allen thought that the majority of the shareholders would be, as he should be, guided by the decision of the directors.

The Chairman said he did not look at matters quite so gloomily as Mr. Gotobed appeared to do. He thought 7 per cent. might be paid, but still he thought that a declaration of a dividend of 6 per cent. would lean to the side of prudence.

Mr. Fetch asked whether it was thoroughly understood that not one shilling was to be paid for expenses incurred by the other side.

The Chairman said he really could not answer that question.

Dr. Cartmell would appeal to the meeting. He would ask whether it was desirable that such petty details as these should be gone into.

The Chairman said both Mr. Fetch and Mr. Gotobed had overlooked his (the chairman's) observation, that the company would be called upon to make a sacrifice.

Mr. Fetch said there was no doubt that a sacrifice would have to be made, and, more than that, a very great one. He should like to know, however, to whom they were indebted for that sacrifice.

Mr. Foster thought it had been decided, by resolution, that the matter should be left to the discretion of the directors.

The Chairman said it had not. He had already ruled that no such resolution could be put as a proposition. He only desired to ascertain the feeling of the meeting.

Mr. Fetch said he neither agreed to nor dissented from the proposed course, but let those bear the brunt upon whom it shall fall. If it had not been for Mr. Balls and Mr. Peed threatening to bring a bill in Chancery, the whole of the gas matters would have been settled last year.

Mr. Balls said, in answer to Mr. Fetch, that all he had done he should, occupying a similar position, do again. Whilst he was a director, he would do his duty fearlessly and impartially, and he would still maintain that any shareholder was equally entitled to his back dividends, as any gentleman present was to his dividend upon Consols. He had nothing to retract, nothing to conceal, and nothing to deny, and he should pursue the course that he had reason to believe had already secured the approbation of his brother shareholders.

Mr. Lilley urged upon the meeting the advisability of a compromise, and leaving the arrangement of the terms in the hands of the directors.

Some questions being put by various shareholders,

The Chairman said it would, he thought, be advisable not to enter upon the detail of the matter at present.

Dr. Cartmell thought the only real question before the meeting was that of dividend. He was sorry to differ from Mr. Peed, but he thought they should adhere to the side of prudence.

Mr. Peed having, with the consent of his seconder, withdrawn his amendment, the dividend of 6 per cent. was formally declared.

Dr. Cartmell, in proposing a vote of thanks to the chairman, observed that he had no doubt a compromise would tend beneficially to all interests.

The vote of thanks having been seconded and carried unanimously,

The Chairman, in reply, said that no one could have regretted more than himself the disturbance to which this contest had given rise. He trusted the terms of the compromise would turn out to be satisfactory, but he could assure his brother shareholders that those who had brought the visitation of a nuisance upon them would not escape scot-free.

Extinguishing a Public Lamp.—At the Greenwich Police Court, on Friday, Feb. 12, George Pearce White, a respectably dressed young man, of 28, Salisbury Street, Bermondsey, appeared to a summons, charged with having wilfully and unlawfully extinguished a light in a street-lamp, the property of the Surrey Consumers Gas Company. The charge was distinctly proved by a police-constable. The magistrate said the offence was not only a mischievous act, but was likely to inconvenience the public, and lead possibly to accidents. He should therefore impose the full penalty of 40s. or one month's imprisonment. The money was immediately paid.

Canterbury Local Board.—The mayor presided at the fortnightly meeting of the General Purposes Committee, on Thursday evening, Feb. 11. The surveyor's report was read, stating, *inter alia*, that he had received a letter from the gas company, respecting the connexion of their drains with the new sewer; he had examined the premises, and could not object to this being done, provided that the company erect a precipitating filtering-tank on their premises to filter the liquor previous to its entering their drains. Alderman Masters did not agree to this, because some fish had already been poi-

soned by the liquor from the gas-works. Mr. Rayner said that was an accident, or, to take it in the strongest terms, it was carelessness. In reply to Mr. Harrison, the surveyor said the gas company now made use of the liquor in connexion with their business. Mr. Dance thought the liquor would undergo a great dilution by the time it got into the drains. The surveyor said they could inspect the filtering-tank, and see if anything injurious went through it. After some further discussion, it was determined that the matter should be postponed.

A City of Darkness.—The *Kingston Morning Journal* complains that the chief town in Jamaica is not yet lighted with gas, though it is to be found even in villages in other countries. There is a prejudice, it says, in the community against gas, from fear of the danger when the pipes explode.

Dr. Stevenson's Report on the Gas supplied by the Imperial Company to the Vestry of St. Pancras during the Month of January, 1869:—

Date.	Number of Observations.	Average Light in Candles produced by 5 Ft. of Gas per Hour.	Light in Candles reduced to Consumption of 120 Grs. per Hour.	Traces of Ammonia.	Traces of Sulphuretted Hydrogen.
Jan. 1	10	16·1	16·3	Present.	None.
4	10	15·9	15·2	None.	,,
19	10	14·6	14·2	Present.	,,
21	10	11·8	12·8	,,	,,
22	10	14·1	13·1	,,	,,
23	10	12·7	11·7	,,	,,
25	10	12·0	13·0	None.	,,
26	10	15·5	13·9	Present.	,,
27	10	12·4	13·3	,,	,,
28	10	13·0	13·1	,,	,,
29	10	13·7	14·3	,,	,,
30	10	13·7	14·3	,,	,,

The illuminating power of the gas ranged from 11·7 standard sperm candles to 16·3 candles, averaging 13·8 candles. An illuminating power of 12 candles is required by Act of Parliament. The gas on one occasion fell very slightly below this standard, but on an average, was 15 per cent. in excess of the required illuminating power. The amount of sulphur (impurity) was slightly above the quantity permitted by the Act of Parliament—viz., 21·6 grains in 100 cubic feet. Sulphuretted hydrogen was invariably absent. Ammonia was present on ten out of twelve occasions.

Singular Bequests.—The will of Felix Alfred Cooper Webb, late of Wednesbury, Staffordshire, gas-tube manufacturer, was proved in the registry at Lichfield, on the 1st ult., by Edward Brown, of Wolverhampton, the acting executor and trustee, power being reserved to Thomas Barkworth, of Millbank Row, Westminster, the other executor. The personalty, though sworn under a small amount—namely, £3000—is widely diffused in small legacies to secretaries, managers, clerks, surveyors, engineers, and other officers connected with the several gas companies in the metropolis and many other parts of the kingdom. He has left to his executors—namely, Mr. Brown, £250, and Mr. Barkworth, £250. To Mrs. Ann Morris he leaves his freeholds and a legacy of £250; and to her daughter, £250, besides other legacies. There are the following charitable bequests—viz., to the Home for Little Boys, at Tottenham, £150; the Wolverhampton Hospital, £100. The residue he divides into four equal parts amongst the following institutions:—The General Hospital at Kensington; the Wolverhampton Hospital; the Hospital for Diseases of the Skin, Blackfriars; and the Sanatorium, Whitechapel, of which Mrs. Gladstone is the president.

Faversham Water Company, Limited.—On Monday evening, Feb. 1, the sixth annual meeting of this company was held in the Guildhall of that town—Mr. W. Murton in the chair. The report showed that 470 houses were supplied with water, being an increase of 103 during the past year. The directors recommended a dividend of 5 per cent. on the preference shares and 2½ per cent. on the original shares. The chairman stated that the income had increased by £133, including the amount paid by the railway company, leaving a very satisfactory increase from the ordinary consumers. The balance in hand was somewhere about £300, and the dividends would take about £280. The report was adopted, and the retiring directors re-elected.

Chatham Water Company.—The dividend proposed by the directors to be declared at the approaching half-yearly meeting will be at the rate of 6 per cent. per annum, carrying forward a sum to the reserve-fund, which now amounts to £2000.

Serious Gas Explosion.—At a quarter to six o'clock, on the evening of the 4th inst., an explosion of gas took place at No. 2, Sun Street, Bishopsgate, which has resulted in the loss of three lives. The premises where the calamity took place are in the occupation of Mr. Hemshaw, a builder, who, however, does not reside there, and the place was left in charge of Mrs. Susan Gardiner, who acted as housekeeper. It appears that between five and six o'clock an escape of gas took place from the telescope chandelier in the front room on the ground floor, and that it found its way through the crevices of the door into the passage and up the stairs. This appears to have attracted the attention of Mrs. Gardiner, and she, as is very frequently done, took a lighted candle to see what was the matter. According to the statement of a child of six years of age, she went downstairs with her two youngest children, Emma and Susannah, aged respectively two and three years. When she got to about the bottom of the lower staircase a terrific explosion took place. The concussion was so great that the windows were shattered, the chandelier was broken off from the tube, and the gas escaped in a body of flame. This being seen from the street, some of the passers by forced an entrance through the window, and succeeded in extinguishing it. Police-constable King, of the City police force, went to the spot, and, hearing screams proceeding from the passage, he thrust in the door, and entered the house to rescue those who were in danger. He found the passage filled with flame, but he succeeded in getting out Mrs. Gardiner, who was all in a blaze. The poor woman called out, "My child, my child," and the policeman immediately ran back into the house, and managed to bring out one of the two children. The second child was rescued by one of the crowd. The policeman's hand was severely burnt while trying to save the lives of the inmates. The sufferers were at once taken to the surgery of Mr. Chandler, who prescribed for them and ordered their removal to the hospital. They were all three burnt so severely that little hopes were from the first entertained of their recovery, and a day or two afterwards they died. The fire on the premises was easily extinguished, almost before the arrival of the fire-engines. At the inquest, the husband of the deceased woman said the chandelier, from which the escape of gas took place, had not been used for two months. The day after the explosion he saw his wife at the hospital. She said she knew nothing about the explosion, and did not know how she got to the hospital. The deceased and the two children were the only people in the house at the time of the explosion. Mr. Knight, an engineer, belonging to the metropolitan fire brigade, believed the explosion took place owing to the chandelier, which was a sliding one, not being supplied with water. The chandelier should have been supplied with water every three weeks. The coroner remarked upon the melancholy nature of the case, and the jury returned a verdict of "Accidental death."

Register of New Patents.

1361.—Peter Spence, of Newton Heath, Manchester, in the co. of Lancaster, manufacturing chemist, for "*Improvements applicable to the purification of gas used for illumination.*" Patent dated April 25, 1868. (Void by reason of the patentee having neglected to file a specification in pursuance of the conditions of the letters patent.)

This invention relates to the application of a certain material or materials for purifying gas whereby it is deprived of sulphuretted hydrogen. For this purpose protosilicates and procarbonates of iron are employed in a native state, or as they arise from manufacturing processes. The substance especially used is the slag which rises from regulus during the process of smelting copper ores, and which is the silicate of iron required. The slag also which arises from the puddling of iron, and commonly called tap cinder, is a similar substance, and will answer the purpose of the invention. The protocarbonates used may be defined by the Cleveland and black band ironstone. In conducting the process the material is ground into small particles and diffused in the purifier ordinarily used in the manufacture of gas for illumination.

1369.—Frank Clarke Hills, of the Chemical Works, Deptford, in the co. of Kent, manufacturing chemist, for "*Improvements in the manufacture of gas and in the purification of 'gas liquor,' and in utilizing gas tar and crude hydrocarbon oils, and in furnaces for effecting the combustion of the said gas tar or hydrocarbon oils.*" Patent dated April 25, 1868.

This invention relates, firstly, to the purification of gas (more or less perfectly) from sulphuretted hydrogen, carbonic acid, and the bisulphide of carbon. The said purification is effected by passing the gas through gas liquor, which is purified and used in the following manner:—The gas liquor as it is produced is passed through, two, three, or more boilers, or stills or condensers, placed one at a higher level than another, so that the liquor will run through suitable connecting-pipes from one still to another. The said stills should be kept about half or two-thirds full. Heat is applied to the lower boiler or still, and the liquor is made to boil. By this boiling sulphuretted hydrogen and carbonic acid are driven off, and also some ammonia. These products are conveyed by a suitable pipe from the first or lowest still into the second boiler or still which is placed at a higher level, and the pipe conveying the said products dips into the liquor in the second still, so that the gases may come in contact with the said liquor as much as possible. A spreading diaphragm is or may be placed at the bottom of the pipe so as to bring the gases more in contact with the liquor in the still, which liquor must be kept pretty hot by steam-pipes or otherwise. It is found that about 180° Fahr. answers very well for the purpose. A considerable portion of the ammoniacal vapour which passes off from the first still with the gases is taken up by the liquor, but the greater portion of the sulphuretted hydrogen and carbonic acid gases passes through the liquor and escapes into the third still, if three stills are employed. The pipe which conveys the gaseous products from the second to the third still also dips into the liquor contained in the latter, in the same manner as the pipe which conveys the gaseous products from the first to the second still. Scrubbers filled with coke may be used instead of the second and third stills, and the gas liquor may be run, as in the ordinary way, through the said scrubbers to meet the ascending products or gases, but the stills are preferred to the scrubbers. The sulphuretted hydrogen, carbonic acid, and other gaseous products from the third still are conveyed to a furnace in connexion with a chimney to be got rid of. Any ammonia passing away with the escaping gases may be retained by passing the said gases through a condenser or water or acid scrubber on their way to the chimney. The gas liquor when purified from the sulphuretted hydrogen, carbonic acid, and other waste products (which liquor when so purified is nearly caustic ammonia) is run hot from the first still through pipes into tanks for use. The pipes conveying the hot gas liquor from the lowest still are enclosed in other pipes, through which the cold gas liquor to be purified is caused to flow up to the third still. The cold gas liquor will thus become hotter and hotter as it passes between the outer pipes and the pipes conveying the hot purified gas liquor from the first still to the tank, and will at the same time cool the said hot gas liquor as it runs through the inner pipes, so that by the time the liquors arrive at the ends of their respective pipes the cold gas liquor has become hot, and the hot gas liquor from the first still has become cool. Instead of passing the gas liquor through outer and inner pipes, as above described, the said gas liquor may be passed through a vessel or heater containing a number of pipes, the hot gas liquor being caused to pass outside the said pipes, and the cold gas liquor being caused to pass through the said pipes, or *vice versâ*.

The invention relates, secondly, to the utilization of gas tar or such crude hydrocarbon oils as are applicable for burning in furnaces by burning it or them in retort or other furnaces constructed for or adapted to the purpose, as hereinafter described, in order thereby to effect a partial saving in the solid fuel used. When tar is used, the most volatile oil or coal naphtha, which is too valuable to be burnt, is distilled from it. This is effected by filling a still with tar to the required height, at which an outlet-pipe is fixed, and then running into the still at the bottom thereof a regulated stream of crude tar, and regulating the heat so as to distil off the required amount of volatile oil or naphtha. The tar, deprived of this spirit, will run out at the outlet-pipe so as to keep up a continuous process. It is preferred to use steam-heat instead of fire-heat, as the former is safer.

The furnace in which the tar or crude oil is to be burnt is constructed as follows:—That part of the furnace containing the solid fuel used may be of the ordinary form. The front of the ash-pit is provided with a tightly fitting door, and the floor of the said ash-pit slopes downwards from the said door to the centre of the ash-pit. Atmospheric air, instead of being admitted in front, is admitted at the back or middle of the ash-pit by means of a pipe or flue running through the side of the said ash-pit. A transverse opening, or slot communicating with the ash-pit, is formed in the dead plate of the furnace. The tar or oil is run in a regulated stream through a channel or pipe into the front part of the ash-pit, and will run down the sloping bottom thereof towards the centre. The heat of the fire above distils the said tar or oil; the greater portion of the vapour evolved passes up through and is burnt by the said fire, and the portion of the said vapour which does not so pass through the said fire passes through the opening in the dead plate and is burnt as it passes over the said fire,

atmospheric air being admitted above the fuel through holes in the furnace door, or through side-flues in order to effect the combustion of the said vapour. A portion of the said vapour may be burnt in the ash-pit, by allowing a sufficient quantity of atmospheric air to pass into the said ash-pit by the side pipe or flue hereinbefore referred to. It is preferred to make gas-furnaces (for the purpose hereinbefore described) of the shape known as "V-shaped furnaces," without fire-bars, as any amount of heat may then be allowed in the ash-pit. When fire-bars are used they should be made hollow, and the cold atmospheric air to supply the furnace and ash-pit should be passed through the interior of the said hollow bars to keep them as cool as possible. If preferred, in the furnaces of gas-retorts the tar may be run on to the dead plate of the furnace, or on to fuel spread on short bars used in lieu of a dead plate, and from thence any portion that is not burnt will run through the furnace into the ash-pit, but in this case an arch, having its sides springing from the sides of the furnace, should be built over the dead plate, to prevent the unburnt vapour of the tar passing up the front flues of the said furnace, and no slot will be required in the dead plate. When the furnace is too wide to form a single V-shaped receptacle for the fuel, the said furnace may be composed of two or more V-shaped receptacles.

The claims are—

1. Purifying gas liquor (more or less perfectly) from sulphuretted hydrogen and carbonic acid gases by the process hereinbefore described.

2. Purifying gas by passing it through gas liquor which has been purified by the aforesaid process.

3. Utilizing gas tar and crude hydrocarbon oils, by burning it or them in the furnaces of gas-retorts and in other furnaces in the manner hereinbefore described.

1374.—Victor Delperdange, of the city of Brussels, in the kingdom of Belgium, civil engineer, for "*Improvements in the construction and modes of connecting pipes or tubes of metal or other material.*" (Complete specification.) Patent dated April 27, 1868.

This invention consists in certain improvements in the construction of pipes or tubes of metal or other material, and in the combination and arrangement of mechanism whereby such pipes or tubes are connected together with great simplicity and efficiency.

One portion of the improvements consists in constructing the end of each tube or pipe with an enlargement, in order to prevent the breaking or cracking of the tubes or pipes by means of concussions or blows to which they may be subjected. This mode of construction admits of a considerable decrease being made in the thickness of the body of the pipes or tubes. The form or outline of the terminal ring or flange, instead of being single, may be made double, or triple, or quadruple; or the top of the ring or flange may be flattened, so as to enlarge the surface of the joint. These flanges or rims may also be made hollow or sunken, instead of projecting.

A small plate or cover is used for the joints, the same being made with flanges, and embossed or stamped. A ring of caoutchouc or other elastic substance is placed around each joint, such rings being made with ribs on one or other or on both of the surfaces, in order to increase their elasticity, and to increase the number of points of contact. Each joint is surrounded by a collar, which is entirely made of a strip of rolled iron, including the ears. The collar can be fluted, if required to extend the surface of action, in which case the cover-joint must also be fluted. In order to direct the tightening strain towards the centre, the claws of the collar may be lengthened, so as to act as a buttress; or the ends of the claws may be doubled inwards, so as to form a flange to one claw or to both.

A simple wedge laid longitudinally may also be driven between the two claws, or the wedge may be used transversely. Two wedges superposed may also be used, both being free, or one fixed and the other moveable. A wedge and ring or hoop may also be used, and the use of a bolt avoided. The stirrup, or tie, with one or more keys, may also be used singly for tightening, or with a bolt. The tightening of the collar may also be completed by a safety apparatus composed of a stirrup or tie, through which the bolt passes, and the place of which it supplies in case of breakage. The collar being sufficiently tightened, a key fixes the tie or stirrup by the side and against the head of the bolt. Any similar or analogous means may also be used; for instance, a counter-plate closed by two screw-bolts, the ears of the tie or stirrup being screw cut; or, if they are not provided with a screw-thread, the screw-bolts may be replaced by keys. The tightening screw-bolt may be replaced by a bolt fastened by one or two keys, or two bolts placed one over the other, one being a screw-bolt and the other a keyed bolt, are applicable, or the two bolts may be of the same kind. In order to strengthen the connexion or joint, ears or lugs, either fixed or moveable, united by two or more bolts, may be added to the ears of the collar. The screw-bolts and the key-bolts may be substituted for each other. These different descriptions of collars may be made of steel, by which their strength and duration may be increased. By means of the same arrangements tubes or pipes having no projecting parts may be connected. The collar in such cases must be constructed of flat iron or steel—that is to say, with flanges; or the latter may be placed on the outer side of the collar, the small plate or cover-joint never failing to adapt itself exactly to the form of the collar, and having on each side a flange giving it the required rigidity. These modifications are specially applicable to the connecting of copper or drawn-iron pipes or tubes, on the ends of which small rings or flanges, either sunken or raised, may be formed.

1393.—Gion Baptiste Babacci, of Florence, in the kingdom of Italy, for "*Improvements in gas-engines.*" Patent dated April 29, 1868.

This invention relates to an improved construction of gas-engine, and consists in the arrangement or construction of two systems of engines—viz., firstly, of a vertical single-acting engine; secondly, of a horizontal double-acting engine.

The invention is not described apart from the drawings. The claims are, first, for the general arrangement and construction of gas-engines as described and represented in the drawings. Secondly, the keeping distinct the parts generating power from those transmitting power, leaving the pistons which receive the impulse of the explosion free, and keeping the motive piston fixed to the transmitting parts. Thirdly, the means of causing the action partly of atmospheric pressure and partly of artificial pressure. Fourthly, the making the engine double-acting. Fifthly, the application of valves for maintaining the disequilibrium produced by the explosion. Sixthly, the employment of a compressed mixture, so as not to increase the size of the explosive chamber, and to increase the effect of the explosion. Seventhly, the employment of a pump for preventing the resistance to the passage of the air driven out by the explosion. Eighthly, the employment of an automatic regulator for keeping the explosive mixture at a pressure equal to that of the engine; and ninthly, the causing the explosion to take place between two pistons working in opposite directions, all as described and shown respectively in the drawings accompanying the specification.

1408.—Francis Wise and Edward Field, both of Chandos Chambers, Adelphi, in the city of Westminster, consulting engineers, for "*Improvements in apparatus for effecting the separation or removal of foreign matters or impurities from water.*" Provisional protection only obtained Dated April 30, 1868.

According to this invention, the water is submitted to the action of substances, which, by admixture therewith, have the effect of throwing down, separating, or removing foreign matters or impurities. When treating water impregnated with earthy matters, caustic baryta is preferred, for which purpose vessels containing series of cells, chambers, or passages, are employed, the upper parts or portions of which communicate with each other at their respective ends alternately, so that the water under treatment, in passing from the inlet to the exit openings of the apparatus, is compelled to traverse each of the entire series of horizontal cells, chambers, or passages, while traversing which it will be subjected to the constant action of the caustic barvta or other substance or substances mixed with it.

1428.—John Warne, of the Blackfriars Road, in the co. of Surrey, pewterer and beer-engine manufacturer, for "*A new or improved union junction or fastening for pipes and tubes.*" Patent dated May 1, 1868.

This invention consists in attaching to or forming in a piece with one end of a tube-tap, one, two, or more projecting pieces or studs, and in providing a nut with recesses or apertures corresponding therewith, the said nut carrying a loose flanged tube, to receive another and flexible tube, the nut and tap-tube being secured by passing the recesses over the studs and turning the nut.

1429.—William Edward Everitt, of Birmingham, in the co. of Warwick, tube manufacturer, for "*Improvements in the manufacture of copper, brass, and metal tubes.*" Patent dated May 1, 1868.

In constructing tubes according to this invention, a solid copper rod, ingot, or lump is employed, as the case may be, and a hole is bored, drilled, or punched through the same, of any desired diameter. The solid tube is then rolled out in a heated state upon a plug and rod between grooved collars to any desired length, the process of rolling drawing the tube off the plug. The tube is then annealed, and it is further produced to the required extent by the operation of drawing upon a draw-bench. For brass and other metal tubes a thick solid tube is cast, instead of the same being bored as before mentioned; afterwards it is proceeded with in the manner described.

1430.—Paul Marlin and Auguste Tack, of Brussels, in the kingdom of Belgium, civil engineers, for "*An improved method of and improvements in apparatus for producing gases from liquid hydrocarbons, and employing the same for illuminating and heating purposes.*" Patent dated May 1, 1868.

This invention consists in the transformation of liquid hydrocarbons, and especially the heavy or dead oils of coals, called creosote, into gas by the following means:—

1. By reducing or converting the hydrocarbon oils into vapours in any distilling apparatus.

2. By introducing into the tube by which the hydrocarbon vapours pass from the still, a jet of steam, which is to have the same direction as the hydrocarbon vapours. This steam is supplied either from a steam-boiler, or from waste steam, or from any other apparatus. The water and the oil may be vaporized on heated cast-iron plates, which plates could form the sides of a close vessel, into which the two liquids would be run in convenient proportions, but the mode of vaporization is quite independent from the principle or basis of this invention. This steam combines with the vapours of the hydrocarbon, and at the same time facilitates its vaporization. By regulating the pressure of the steam as well as the temperature of the distillation, it is easy to control the relative proportions in which the hydrocarbon vapours and steam are to be mixed.

3. The vapours and steam mixed are caused to pass into ordinary gas-retorts, which can thus be used without any alteration. These retorts are filled with coke or any other infusible substance, and heated to a red heat. The vapours enter at one end, and, passing out the other end, are conveyed to the washers, condensers, purifiers, and other apparatus exactly in the same way as ordinary coal gas. The gas produced by this process may be mixed with ordinary coal gas, provided there be sufficient lime in the purifiers to take up the carbonic acid. The gas made by this process is easier to purify than the coal gas. If necessary, in case the temperature of the gas-oven were too low, the vapours may be made to pass successively through more retorts. In the red-hot retorts the hydrocarbon vapour and the steam decompose themselves at the same time. The hydrocarbon vapours give up a certain quantity of carbon, which they contain in a greater proportion than the gaseous hydrocarbon, and pass off in this latter form; at the same time, every particle of carbon set free combines with a portion of hydrogen produced by the decomposed steam, making in this way a particle of permanent gas which possesses lighting and calorific properties. The oxygen, which is set free at the same time as the hydrogen, combines also with a certain quantity of carbon, which it may take up from the red-hot coke (if this substance be used), and in this way not only carbonic oxide, which is a combustible gas, is produced, but especially carbonic acid, which may be taken up by the purifier charged with lime. The transformation is much better performed when the hydrocarbon vapours and the steam are mixed before hand, and consequently every atom of carbon which is set free is brought into contact with particles of decomposed steam. This double decomposition between the hydrocarbon vapours and the steam is in conformity with well-known chemical principles which have been often applied, and therefore cannot be patented.

1444.—William Robert Lake, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, consulting engineer, for "*An improved mode of and apparatus for generating gas, and mixing the same with atmospheric air for heating and illuminating purposes.*" A communication. Patent dated May 2, 1868.

In carrying these improvements into practice a furnace is constructed in such a manner that the fuel shall first be exposed to distillation within the furnace walls, and the combustible gases thus evolved, after being properly mingled with atmospheric air, or air and steam, are burned, while the solid residuum is moved to another part of the furnace, and used for the purpose of heating fresh fuel and igniting the combustible gases, the surplus heat being applied to the generation of steam or to whatever other purpose it may be desired.

1459.—David Pitcairn Wright, of the firm of Wright and Butler, of Birmingham, in the co. of Warwick, lamp manufacturers, for "*Improvements in the manufacture of certain descriptions of taps.*" Patent dated May 5, 1868.

According to this invention the taps are constructed of iron, either wrought or cast, in combination with cork or other equivalent barrels, the said iron being protected on its surface when desired, by the process of galvanizing,

tinning, or other equivalent means of coating or depositing metallic surface not liable to rapid oxidation.

1467.—JOSEPH HICKMOTT, of Clapham, in the co. of Surrey, engineer, for "*Improvements in preserving metallic articles from oxidation and decay.*" Patent dated May 5, 1868.

This invention consists in the application of lime, or compounds of lime, as an envelope, wrapper, plaster, bath, bed, or covering round the articles to be preserved, so as to neutralize the effects of acids or sulphurous compounds or other destructive agents, and to prevent their contact with the articles. The special object is to keep the articles to be preserved from contact with earth or soil.

1468.—JOHN COURT, of Sheerness, in the co. of Kent, for "*Improvements in traps or apparatus for receiving sewage matters, and separating the solid from the liquid portion thereof.*" Provisional protection only obtained. Dated May 5, 1868.

This invention is particularly intended for sea-coast and other low-lying towns and places, and the object is to receive all kinds of sewage matters, to intercept the solid portion, so that it may be removed from time to time; to prevent the return of the sewage through the trap, and to carry off all evolved gases.

1481.—JOHN YOUNG, of Aspull, in the co. of Lancaster, for "*Certain improvements in the construction of ovens to be employed in the manufacture of fuel termed 'coke,' oil, and gas.*" Patent dated May 6, 1868.

This invention relates to a novel arrangement and construction of oven to be employed in the manufacture of "coke," mineral oil, and gas, and consists—

1. In constructing or arranging the oven with a dome roof and a furnace beneath the floor of the oven, and the flues so applied that the temperature may be raised sufficiently high to distil the oil from the coal, to separate the gas, and to leave the residue "coke," which construction of oven is to be employed in combination with a casing or cover enclosing the dome, through which cavity the waste heat passes as it proceeds from the fire to the chimney; by this means the roof of the oven is kept heated, which prevents condensation of the oil and vapours within, and which are thereby kept in a liquid state until drawn off, and the deterioration of the oil by the admission of atmospheric air, which often enters through the brickwork of the ordinary single roof, is prevented.

2. The improvements consist in placing or applying the outlet-pipe for drawing off the gas and vapours at the side of the oven and as low as possible, so that it is above or clear of the charge of coal, whereby the oil and vapours pass away as soon as they rise to the surface of the coal and at a low temperature, which improves the quantity and quality of the products.

3. The improvements consist in the use and application of an exhausting apparatus to assist in abstracting the gas, oil, and vapours from the oven.

The claim is the construction of an oven-retort capable of manufacturing coke, oil, and gas in one operation, and for the manufacture of good oil and coke by withdrawing the former as formed, and hardening the latter by protracted contact with the returned gas.

1502.—ROBERT HARLOW, of Heaton Norris, in the co. of Lancaster, brass-founder, for "*Improvements in apparatus for supplying water to and withdrawing water from baths, wash-basins, and other receptacles.*" Provisional protection only obtained. Dated May 7, 1868.

This invention has for its object the construction of an apparatus for supplying hot and cold water to baths, wash-basins, or other receptacles, more speedily than has hitherto been practicable, and in providing convenience for taking off the overflow and waste water in one and the same article or apparatus, and consists of a double valve arrangement, each valve being worked by a three-threaded screw spindle, one of such valves supplying the hot, and the other the cold water into a central compartment, which communicates with a vertical cylindrical vessel connected near its lower extremity to the bath or other vessel to be supplied with water, the bottom of such vessel being provided with a seating for an annular valve disposed upon the end of a length of pipe or cylinder of smaller diameter than the vessel in which it is placed.

1527.—GEORGE THEODORE SEYDEL, of Tavistock Place, Tavistock Square, in the co. of Middlesex, engineer, for "*Improvements in apparatus for heating and ventilating buildings, part of which improvements are also applicable to steam-boilers or steam-generators.*" Patent dated May 9, 1868.

This apparatus comprises, first, a steam-generator of peculiar form, which can also be used for supplying steam for steam-engines and other purposes. Second, a regulator, either to be worked by hand or self-acting, by which the pressure of steam can be regulated and excess prevented. Third, a heat-diffusor, which will be placed in the compartment to be heated, and connected by pipes with the generator. The generator consists of a series of small pipes, the lower ends of which are closed by welding, and the upper ends fixed in a box of cast or wrought iron of suitable form.

1548.—THOMAS SHINTON, of Blaina, near Newport, in the co. of Monmouth, for "*Improvements in forming the ends and joints of pipes.*" Patent dated May 12, 1868.

This invention has for its object improvements in forming the ends and joints of pipes. In order to form joints capable of withstanding a heavy pressure, and without requiring that the pipes should be laid rigidly in a straight line, the ends of the pipes are so formed that when putting two ends together to make a joint they may retain and compress between them a ring of vulcanized india-rubber or other compressible material, such ring being supported whilst exposed to the pressure on all four sides, each end of the pipe supporting it on two sides. On one pipe there is formed a spigot or projection somewhat exceeding in length the thickness of the packing-ring employed, and slightly tapered externally. The packing-ring surrounds this spigot, and also rests upon a flat surface formed at the end of the pipe around the base of the spigot, and which surface is of the same width as the packing-ring, or thereabout. The other pipe has a recess in its end corresponding with the spigot of the first pipe, and at the other end of this recess, is a flat surface of the width of the packing-ring, which rests upon it when the joint is made. This flat surface again forms the bottom of a recess somewhat deeper than the thickness of the packing-ring, and the walls of this recess, when the joint is made, support the ring on its outer side, so that the ring being supported on all four sides, two sides by each pipe, it cannot escape, whatever may be the pressure applied. The ends of the pipes are furnished with lugs and screw-bolts to draw them together, or bolts and cotters may be employed in place of screws. A packing-ring of lead may often advantageously be used in place of vulcanized india-rubber, or cement may be substituted for the packing-ring.

1598.—ALFRED VINCENT NEWTON, of 66, Chancery Lane, in the co. of Middlesex, mechanical draughtsman, for "*Improvements in liquid-meters.*" A communication. Patent dated May 15, 1868.

This invention relates to that description of liquid-meters in which a reciprocating piston is used within a measuring cylinder, and made to operate a primary valve that serves to control the passage of the liquid, to operate a secondary valve, for the purpose of reversing the action of the piston within the measuring cylinder or chamber, and the invention consists in a novel and advantageous arrangement of said valves with their chambers relatively to the measuring cylinder; also in a peculiar construction of the valves, of a multiplied head or disc form, in combination with the passages which they control; and in an arrangement of certain of the ports or passages, whereby not only is the secondary valve kept shut by the pressure of the fluid in a static relationship or action upon it, but also by the flow of the liquid through it. The invention further covers a chain or link-like pulling connexion and thrusting action of the piston in the measuring cylinder with and on the primary valve and tubular stem construction to the latter, to give to the valve a balance character, as it were—that is, to relieve it of objectionable end resistance or pressure.

1600.—WILLIAM SMITH and GEORGE BROWNE SMITH, both of Kennington Park Road, in the co. of Surrey, gas-meter manufacturers, for "*Improvements in dry and wet gas-meters.*" Patent dated May 15, 1868.

The first part of this invention consists in forming the diaphragm of dry gas-meters as hereafter described, and in such manner that it is capable of holding twice the quantity of gas that a diaphragm of the ordinary construction will hold. The bottom rim, to which one side of the diaphragm is attached, is made larger than the rim carrying the disc, whereby the disc is enabled to pass through the larger rim. By this means the whole of the gas contained in the diaphragm is expelled at each stroke of the disc, a longer throw is given to the arms, the meter itself works with less friction, and is much less in size than when made as heretofore.

The second part of these improvements is intended to facilitate the registration of dry gas-meters, and so to render it only necessary to once prove them. Heretofore a pin has been free to slide on the tangent-bar fastened in position by back-nuts. According to this invention the tangent-pin to which the arms are attached is tapped, so that the pin itself turns on the bar. A given number of threads will determine the number of revolutions the pin must make to render the registration of the meter as perfect as may be, for it is only necessary to know the value of a thread to ascertain how many revolutions the pin ought to make backwards or forwards to make the meter perfect, and, this determined, a key or peg may be passed through the threaded part of the pin, to hold it firm and steady on the tangent-bar.

The third part of these improvements consists in the employment of an eccentric-valve for dry gas-meters, so constructed that while rotating the inlet and outlet passages are at all times equal. A rod is attached to one end or side of the valve-cover, and this rod passes through a loop on the valve-plate. Steel or cast-steel facings are employed for the valve-cover.

The fourth part of these improvements relate to that kind of wet meters known as the compensating wet meters. The improvement consists in materially simplifying the method of keeping the water at its proper level. A bent pin is inserted in the end of the shaft of the measuring drum or wheel, and through the plate or separating chamber a stuffing-box is placed, through which a cranked rod passes, and against which the bent pin passing through the shaft of the measuring-drum acts, causing the cranked rod to revolve. On the outer end of the cranked rod are fitted two or more hollow buckets or arms, so formed that at each revolution of the measuring-drum a small quantity of water is carried up and discharged into the measuring part of the meter, and which will ensure the water in the meter being at all times at its proper level.

1624.—WILLIAM NEEDHAM and JAMES KITE, both of Vauxhall, in the co. of Surrey, engineers, for "*Improvements in preparing filtering surfaces for the depuration of fluids.*" Provisional protection only obtained. Dated May 18, 1868.

After repeated experiments, the inventors state that they have arrived at a simple, certain, and practical means of obtaining filtering surfaces of equal density in every part, and their invention is based upon the application of neutral substances on filtering surfaces by the agency of the fluid under treatment operating under pressure.

1642.—JOHN KENNETT, of 1, Alma Place, Eastbourne, Sussex, for "*An improved method of ventilating sewers.*" Patent dated May 20, 1868.

This invention consists in ventilating the sewers by connecting the same with the street-lamps of a town or place, by inserting a tube or duct in the crown or other convenient part of the sewer, secured in an air-tight manner with the bottom or other convenient part of the lamp-post. The hollow lamp-post, so far as available, is to form the continuation of the tube or duct, which is to be extended to the lantern, so that the light may be fed with air from the sewer. This tube may be opened or closed by any suitable valve. An enlarged portion of the tube or the hollow lamp-post may form a receptacle for any disinfecting or deodorizing substance that may be found to lessen or destroy the noxious properties of the sewage gases.

1645.—CLAUDE LUDOVIC TAVERDON, of 60, Boulevart de Strasbourg, Paris, practical engineer, and JULES MORET, of Sèvres, near Paris, in the empire of France, merchant, for "*An improved lift and force double-action pump, giving a continuous and regular supply of liquid.*" Patent dated, May 20, 1868.

This invention consists chiefly in the particular arrangement of the piston, which may be composed of two stamped leather heads connected with each other by a tubular rod or sheath. In some cases the piston has a single head, carrying along the sheath in its up and down motion; this sheath is always set in the central part of the pump, and the liquid runs through it: the piston works in a cylinder divided into two chambers by a moveable diaphragm, so that each head of the said piston plays in a separate chamber, and their tubular connecting or sheath rod slides in a hole bored through the centre of the diaphragm, which hole is provided with a water-tight packing. The tubular rod or sheath which connects both heads of the piston is pierced with several holes for the passage of the liquid, which is forced alternately by each of the piston heads; when one of the said heads creates the vacuum behind it, the other head forces the liquid forward, so that its outflow takes place unintermittingly. The stamped leather heads of the double-headed piston act alternately as piston and as valve; there is no other valve, as in all lift and force pumps. There may be an upper space in which the air driven by the rising liquid accumulates, and forms an elastic cushion, which, by its reaction, regulates the speed of the outflow of liquid.

1655.—WILLIAM TIJOU, of Great George Street, in the city of Westminster, engineer, for "*Improvements in steam-pumps.*" Patent dated May 20, 1868.

In carrying out the invention an ordinary steam cylinder and piston is

employed, the former being provided with the usual steam and exhaust ports or passages communicating with a peculiar valve, hereinafter described. The piston-rod works through a stuffing-box, and is prolonged sufficiently to form the piston-rod or ram of an ordinary or other force-pump, which is situate in the same axial line as the working cylinder, the combined apparatus being thus direct acting. The peculiar form and arrangement of valve, and the means for working or actuating the same, constitute an important feature of this invention. The valve itself consists of a hollow cylinder accurately fitted into a corresponding shaped valve-case, which may be cast in one piece with the cylinder or bolted thereto as found most convenient in practice. The steam and exhaust ports are disposed longitudinally along the valve-case. Along two longitudinally centre lines in the circumference of the cylindrical valve there are formed an oblong recess or chamber in the thickness of the metal, and a port or opening passing entirely through the thickness of the metal and communicating with the internal hollow space or cavity of the valve. The positions of the oblong recess and the port or opening are reversed in the two faces of the valve, so that on turning the valve partly round on its axis the port or opening will bring alternately first one and then the other of the steam-ports into connexion with the centre or hollow of the valve, which is in constant communication with the steam-generator, whilst at the same time the corresponding oblong recess establishes a communication between the opposite steam-port and the exhaust. By chambering or recessing a portion of the circumference of the valve, a saving of material and a reduction of rubbing surface, and consequently of friction, may be effected.

1668.—Edme Augustin Chameroy, of 162, Rue Faubourg St. Martin, Paris, manufacturer, for "*An improved liquid or gas meter.*" Patent dated May 21, 1868.

This improved meter for liquids or gases is based on a new application of the law of the flow of fluids. Its construction does not include any mechanical parts, such as pistons, cocks, turbines, or reaction wheels, or any contrivance for measuring directly the liquids or gases. This meter is specially applicable for indicating the quantity of gas, water, or other fluids passing through main conduits for supplying towns and other localities, or through branch conduits to supply private consumers, or, again, to measure the quantity of water flowing through canals either for navigation or irrigation.

The action of this apparatus is based upon the possibility of estimating a volume of fluid flowing under constant pressure through an orifice of variable area by registering with accuracy, by the aid of a variable motion produced by the constant oscillations of a pendulum or other source of motion, the consecutive variations of the inlet orifice.

The operation of the apparatus, supposing it applied to the branch service-pipe of a private consumer, is as follows:—The inlet-pipe being connected to the supply-pipe, any water entering the apparatus, in order to escape through the outlet opening, must act upon the valve, and through this on the counter. So long as no water is passing through, the valve will remain on its seat and cause the spindle to be so suspended that the disc is situated at the centre of the rotating disc, in which position consequently no rotary motion will be imparted by the latter to the former, and therefore, also, no rotary motion will be imparted to the spindle, and through it to the counter. As soon, however, as water is drawn off through the outlet, thus diminishing the pressure on the top of the valve, the water in the supply-pipe will force the valve upwards until an annular inlet orifice is formed between the edges of the valve and the sides of the casing, in exact proportion to the quantity of water passing through to supply the place of that drawn off. Arrived at such point, the valve will remain stationary, as its weight, less that of the counterweight, will then be exactly balanced by the excess of pressure of the water passing up through the inlet-pipe over and above the pressure of the column of water above the valve. This upward motion of the valve will have caused the spindle, and with it the disc, to descend, thus bringing the latter in contact with a point of the disc, the distance of which from its centre will be in proportion to the rise of the valve. The rise of the valve being always in exact proportion to the area of the annular orifice formed by such rise, and the rotary speed of any point of the disc being always in exact proportion to its distance from the centre, it follows that the rotary motion imparted by the disc to the disc, and through this to the spindle and pinion, will always be in proportion to the inlet orifice, and consequently also to the volume of water passing through the meter in a given time. The motion of the spindle being imparted, as above described, to the wheels of the counter, this latter will be made to indicate correctly the quantity of water passing through. When the quantity of water drawn off diminishes, the valve will sink to a corresponding extent, and a corresponding slower motion will be imparted to the counter by the disc, and when no more water is drawn off the valve will close, and the disc being thus again raised to the centre of the disc, no motion will be imparted to the counter. The only alteration required in the apparatus for measuring large or small quantities is in the size of the valve and of the conical casing, the other part of the mechanism being the same in every case. It is important to observe that this apparatus has the great advantage of requiring only a very small supply of water to put it in action. It may with equal advantage be employed for high-pressure service, as no matter how great and sudden the variations in pressure may be, the before-described action of the valve will always take place with the same exactitude, and will always be in proportion to the fluid or gas passing through.

The claim is, first, constructing apparatus for measuring the flow of fluids or gases wherein the rise and fall of a valve, according to a greater or less flow of fluid passing through, is caused to produce a correspondingly varying area of inlet orifice, and at the same time causes motion to be imparted to registering mechanism in exact proportion to such different areas, and consequently also to the quantity of fluid or gas passing through, substantially as hereinbefore described. Second, the general arrangement of apparatus for measuring the flow of fluids or gases hereinbefore described.

1675.—Thomas Goode Messenger, of the Midland Steam-Works, Loughborough, in the co. of Leicester, hydraulic engineer and valve manufacturer, for "*Improvements in fire-engines or double-action pumps.*" Patent dated May 21, 1868.

This invention consists of an engine or pump in which there is a base or body (made of cast iron or other material) having spaces in it, which spaces convey the water or other liquid from valves to each end of a cylinder, made of brass or other malleable or suitable material, and placed horizontally or perpendicularly, in which cylinder works a solid plunger. When this plunger is moved, the water or other liquid is forced through other valves into an air-vessel, and thence to a jet or spout.

1692.—Jules Oury, of Blois, in the Empire of France, civil engineer, for "*An improved construction of meter or apparatus for measuring liquids or gases, applicable also for obtaining motive power.*" Patent dated May 22, 1868.

The claim is for the employment for measuring gases and liquids of a bell or moveable partition, with an alternate motion, in conjunction with a swing lever, with an intermittent motion for instantaneously opening and closing the openings, by means of a rod provided with moveable stoppers for changing the direction of the gases or liquids when the bell or moveable partition arrives at the end of its journey, whether at top or bottom.

1699.—Edwin William de Rusett, of Lewisham, in the co. of Kent, civil engineer, for "*Improvements in engines worked by steam or other motive fluid, specially applicable to steam-pumps.*" Patent dated May 23, 1868.

The chief object of this invention is to produce the return or lifting stroke of the pump-piston and steam-piston of single-acting steam-pumps by steam of a lower pressure than that which produces the forcing stroke of the said pistons. The invention consists in certain arrangements of a steam-chamber, a steam-cylinder, and a pump-chamber, and in certain modes of fitting and actuating the valve of the steam-cylinder, the details of which are not given apart from the drawings.

1700.—Thomas Ashford, of Birmingham, in the co. of Warwick, nail-cutter, for "*Improvements in machinery for the manufacture of gas-tube hooks or fastenings.*" Provisional protection only obtained. Dated May 23, 1868.

In the ordinary method of making gas-tube hooks or fastenings, blanks having the form of headless nails are cut from strip iron by a pair of cutters; the blanks are then taken to a press, where a notch or V-shaped opening is cut or pierced at the edge of the blank near the head or widest end. This notch forms the shoulder of the finished gas-tube hook or fastening. The widest part of the blank above the notch or shoulder described is next heated and flattened on an anvil, so as to form that part from which the hook of the fastening has subsequently to be made. The hook or fastening is thus completed, with the exception of bending or forming the flattened part into a hook.

This invention consists of the construction and arrangement of parts hereinafter described of machinery for the manufacture of gas-tube hooks or fasteninge from heated strip iron, whereby the cutting off of the blank, the piercing of the notch or shoulder, and the flattening and shaping of the upper end of the blank are effected in the same machine, and an unbent gas-hook or fastening made at each stroke of the machine. The parts of the machine are constructed and arranged essentially in the following manner:—The blank is cut off from the heated strip iron, and the notch or shoulder pierced on one side and near the head of the blank by means of three cutting-tools, two of the said cutting-tools being stationary and the other moveable; the said moveable cutting-tool works between the two stationary cutting-tools, the said moveable cutting-tool having a vertical motion. The moveable cutting-tool, in addition to the cutting-edge for cutting off the blank, has a V-shaped groove or cutting-edge, by means of which V-shaped cutting-edge and an inclined cutting-edge on the back-fixed cutting-tool, the notch or shoulder is pierced in the blank; at the same time the blank is cut from the strip. At the back of the moveable cutting-tool, and working with it, is a spring lever, which acts as a stop to limit the feed of the strip iron between the cutters, and also when the blank is cut, holds it and prevents it slipping from between the cutters. After the blank has been cut off and pierced by the moveable and fixed cutters described, the said blank is carried down by the moveable cutter between a pair of flattening and shaping dies, for flattening and shaping that part of the blank which is to form the hook. As soon as the blank has been carried to its proper place between the dies, a gripping-tool advances and holds it firmly against the fixed shaping-die. The moveable die now advances horizontally, and flattens and shapes the upper end of the blank above the notch or shoulder described, and forms the hook part of the fastening. The grip and moveable flattening and shaping die retiring, the partially made or flat gas-pipe hook or fastening falls from the machine, and the operations described are repeated, a flat hook or fastening being made at each stroke of the machine. The nearly finished hooks or fastenings only require the upper or flattened part to be bent into a hook to be completed. The several motions are taken from the driving-shaft of the machine. The moveable cutting-tool is carried by a lever, to which motion is given by a crank on the driving-shaft, and the moveable flattening and shaping die and the grip are worked by levers receiving motion from cams on the driving-shaft.

1712.—Alexander Melville Clark, of 53, Chancery Lane, in the co. of Middlesex, patent agent, for "*Improvements in rotary engines or apparatus, applicable also as a pump-blower or liquid-meter.*" A communication. Provisional protection only obtained. Dated May 25, 1868.

The chief features of novelty in this invention consist, first, of the construction and arrangement of the piston of rotary engines on an entirely new principle; and second, in the mode of reversing the same by means of a simple arrangement. The piston is constructed as follows:—Two circles are described—the one true and the other slightly elongated; a common centre is given to them, and an equal diameter. The true circle is divided into a certain number of parts, from which radial lines are drawn, and by increasing the length of these lines to a certain extent for one-half the circumference of the circle, and diminishing them on the opposite half of the circumference to an equal extent, a heart-shaped curve is obtained, having the same diameter as the true circle. If in a circle thus formed a piston is placed having a length equal to the diameter of the said circle, it may be made to follow in its motion the outline of the curve, and so produce a combined rotary and to-and-fro motion. The reversing motion is obtained in this apparatus by means of a slide provided with ports, so as to alter the admission and escape of the steam.

1729.—Jabez Morgan, of Kidderminster, in the co. of Worcester, manager of works, for "*Improvements in regulating the temperature of and ventilating hot-houses, conservatories, and other rooms and buildings.*" Provisional protection only obtained. Dated May 26, 1868.

In carrying this invention into effect, a mercurial thermometer is constructed in the bulb or lower part of the stem of which a platinum or other metallic wire is sealed, so as to be in metallic communication with the mercury of the thermometer. In the upper part of the bore of the thermometer stem is another similar wire, which may either be sealed in the said bore, or may be capable of sliding through a stuffing-box, or otherwise, in the said bore. The two wires described are respectively in communication with the positive and negative elements of a voltaic battery, and in the circuit of the said battery is an electro-magnet. When the temperature of the hot-house or other room rises so high that the mercury in the bore of the thermometer ascends sufficiently to come in contact with the wire, an electrical communication is thereby established, the voltaic circuit is completed, and the electro-magnet referred to is excited and becomes powerfully magnetic.

When the temperature of the hot-house or room falls so far as to cause the mercury in the bore of the thermometer no longer to touch the wire, the electrical circuit is broken, and the electro-magnet referred to loses its magnetic power. When the wire in the bore of the thermometer is sealed, and its position fixed, the electro-magnet is brought into and thrown out of action at fixed temperatures. When, however, the wire in the bore is capable of sliding, it may be adjusted to such a position in the bore as to bring into and throw out of action the electro-magnet at any desired temperature.

1738.—WILLIAM BARRY LORD, of Stamford Lodge, Hampstead Heath, in the co. of Middlesex, gentleman, for "*Improvements in portable filters.*" Patent dated May 26, 1868.

This invention relates to the arrangement and combination of filters with pocket drinking-flasks or other portable vessels or receptacles; a flexible tube being also combined therewith, for the purpose of withdrawing the air from the flask or vessel by such when it is placed in the water to be filtered, such tube also acting as a syphon when a continuous supply of filtered water or other fluid is required.

1751.—JOHN SCHOLL, of Berwick Street, Soho, in the co. of Middlesex, engineer, for "*Improvements in gas-burners, and in apparatus to be used in connexion therewith.*" Patent dated May 27, 1868.

This invention relates to improvements in apparatus to be used in connexion with gas-burners, and consists—

1. Of a guard or protector, and modes of applying the same, to be used in combination with a platinum or other metal gaslight improver or perfecter for the purpose of preventing the same from being accidentally displaced or put out of adjustment on the burner, or from being accidentally bent or otherwise injured.

2. Of the adaptation of a platinum or other metal light perfecter, with or without a guard, to a double or cross-cut "bat's-wing" burner having two or more slits cut therein.

3. Of a revolving smoke consumer and diffuser adjusted over the flame of any gas-burner, in order that, by reason of the elevated temperature it attains, it may consume the smoke arising from imperfect combustion of the gas. The guard or protector may consist of a piece of metal bent into the form of a collar, and having, say, four protecting fingers formed thereon, which fingers are slightly bent or curved inwards and outwards, so as to grip the top edge of the burner. In the collar of the light improver there are cut a number of slots corresponding to the fingers of the guard, so that when the guard is adjusted the fingers will spring into these slots, and bear against the burner itself. In order to prevent the light improver and guard from turning round on the burner, a number of flat faces or facets are ground or otherwise produced on the circumference of the burner at the top thereof, against which flat surfaces the fingers obtain a bearing, and thereby prevent any tendency of the parts to move round the burner. In lieu of holding the parts in position by cutting facets round the burner, the same effect may be obtained by having one or more stems or projections formed on the lower part of the guard, and fitting into slots made either in a separate shoulder or into a shoulder made in one piece with the burner. The smoke-consumers may either be constructed in the form of a ventilating fan, or of a conical, spiral, or serpentine form. In either case the heat radiated from the gas-jet, which is situate just a sufficient distance below the smoke-consumer to prevent the deposition of solid carbon or lamp-black thereon, raises the temperature of the thin metal or other material composing the smoke-consumer, so that as the products of combustion pass through or in contact with the consumer they will be partly burnt or further oxidized and the products diffused, whilst the ascending current of air, by impinging against the inclined surfaces of the consumer, will at the same time impart a rotatory motion to the same.

1753.—HENRY BAILEY and FREDERICK BAILEY, of East Retford, in the co. of Nottingham, gas engineers, for "*An improvement in the manufacture of valves for the passage of air, water, or any other liquid or fluid.*" Patent dated May 28, 1868.

According to this invention the body of the valve may be made of any of the usual forms, and with any suitable number of connexions. In one side thereof (by preference the upper side or top), immediately opposite to the valve-seat, is formed an opening of rather larger diameter than the valve itself, and having a screw-thread on its interior circumference. Into this opening is screwed a cover having an octagonal or other suitably formed collar, so that it may be readily screwed in or removed by means of a spanner or key. Through the centre of this cover passes the valve-spindle, the upper part thereof working through a stuffing-box attached to or formed in the upper side of the cover. The upper end of the spindle is provided with a wheel or handle for turning the same, so as to open or close the valve, which latter is attached to the lower extremity of the spindle. The valve is provided with three or more straight guides working inside the seat to keep the former in its proper position.

1754.—RICHARD FELL, of Robinson Row, in the co. of Middlesex, engineer, and ROBERT BARLOW, of Shacklewell Lane, in the co. of Middlesex, builder, for "*Improvements in apparatus for preventing waste of water in or from water-closets and drinking-fountains, cisterns, tanks, and other like receptacles.*" Patent dated May 28, 1868.

This invention, as applied to water-closets and drinking-fountains, consists in combining with the service-pipe, in the manner hereinafter described, a peculiar three-way cock in connexion with a compressed air vessel. This peculiar three-way cock has about one-third of the diameter of its plug cut away, so as to leave an opening or space inside the body of the cock for the forming of a communication between two out of the three passages leading from the barrel of the cock. This cock is situate under the balance-bar of the closet (when applied thereto), a lever in connexion with the balance-bar being coupled with the key or plug of the cock. The service-pipe is connected with one of the openings in the barrel of the cock, whilst the other two passages or openings are respectively in communication with the compressed air vessel and the basin of the closet. On drawing up the handle or "pull" of the closet the lever or balance-bar, which is connected with the key or plug of the cock, opens the passage communicating between the service-pipe and air-vessel. On releasing the handle, or returning it to its former position, the condition of the cock will be changed, a communication being then established between the air-vessel and the basin of the closet, the compressed air in the air-vessel forcing the water into the basin with a pressure equivalent to that due to the height of the column of water in the pipes or main, in addition to the pressure of the air in the air-vessel. The peculiar self-acting apparatus which the patentees propose to apply to cisterns, tanks, water-butts, and other like receptacles, for the purpose of preventing waste of water therefrom arising from overflow, consists of a peculiar equilibrium float-valve, worked by the action of a float-lever, the float of which rests upon the surface of the water in the cistern or tank.

1755.—WILLIAM DALZIEL, of Deptford, in the co. of Kent, brassfounder, for "*An improved combination of cock and valve for controlling the flow of water from constant-supply pipes.*" Patent dated May 28, 1868.

This invention of an improved combination of cock and valve for controlling the flow of water from constant-supply pipes, is intended more particularly to be applied for the regulation and prevention of waste in the supply of water for domestic purposes, where such supply is derived directly from the main service-pipe without the intervention of a tank or cistern, or, in other words, where there is what is termed a constant supply.

In carrying out the invention two cylinders of different diameters are employed, placed end to end on the same axis, each cylinder being fitted with a piston, both of which pistons are attached to one rod in such a position that their stroke or travel is equal. This piston-rod passes a certain distance through the smaller piston, and carries at the end a valve. One end of the smaller cylinder is connected with two pipes communicating with each other, but so arranged that the communication may be shut off by means of the valve just mentioned, and which will take place when the pistons are at one extremity of their stroke. One of these pipes communicates directly with the supply, while the other pipe communicates with the cock or tap, which is placed at one end of the larger cylinder. This cock is constructed with three distinct ways or passages, one of which controls the communication from the pipe to the discharge orifice or nozzle, while through another the pressure of the water is led from an aperture communicating with the supply-pipe to that end of the larger cylinder next to the cock, this second way or passage being so placed in relation to the first that they both open their respective communications at the same time. The third way or passage communicates between the same end of the larger cylinder and the discharge orifice or nozzle, but is so placed in relation to the two former ways or passages as to open its communication when they have by the movement of the plug been closed.

The operation of this arrangement is such that when the cock is open for supply the water is being at the same time admitted through the cock as just described to the larger cylinder, and, acting on the area of its piston, overcomes the pressure that is at the same time acting on the lesser area of the piston in the smaller cylinder at the opposite end, whereby the two are forced to the other extremity of their stroke, at which extremity the valve on the end of the piston-rod closes the communication between the pipe leading to the supply and that leading to the cock, whereby the flow of the water is arrested, and remains so until the position of the plug of the cock is changed, when the water is shut off from the larger cylinder, and a communication being at the same time opened therefrom to the discharge orifice or nozzle, all pressure on the larger piston is released, when the pressure in the supply pipe, acting on the valve at the other end of the piston-rod, is left unbalanced, and the valve is forced open. The pressure of the water is thus admitted to act upon the area of the smaller piston, whereby the piston-rod and valve are pressed back again to their former position, so that when the plug of the cock is also moved back the supply will be resumed. In order to avoid the compression and consequent resistance which would be caused during the time the water is acting on the larger piston by the contents of the larger cylinder being driven into the smaller cylinder, a small passage is constructed from the junction of the two cylinders to the discharge orifice or nozzle, whereby all pressure is permitted to escape. By alternately changing to and fro the position of the plug of the cock any required amount of water may be drawn off, but, whatever the position in which the plug of the cock is left, only such a limited quantity of water can pass through from the supply-pipe as passes during the time occupied by the pressure of the water forcing the larger piston to the extremity of its stroke, which time, and consequently the amount of water so drawn off, may be regulated in the construction of the apparatus.

1767.—HIRAM HAINES, of the city and state of New York, U.S.A., now of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, for "*Improvements in the manufacture of lead pipe and lead pipe lined or cased with tin or other metal.*" A communication. (Complete specification.) Patent dated May 28, 1868.

The details of this invention are not given apart from the drawings attached to the specification.

1785.—HEINRICH HIRZEL, of Leipzig, in the kingdom of Saxony, professor of chemistry, for "*Improvements in the production of inflammable gas, and in apparatus to be used therefor.*" Provisional protection only obtained. Dated May 30, 1868.

This invention relates to the production of illuminating gas from petroleum and petroleum residue, and consists in certain mechanical arrangements for pumping such petroleum and petroleum residue in a continuous jet into retorts heated to a red heat.

1816.—JOHN HENRY JOHNSON, of 47, Lincoln's Inn Fields, in the co. of Middlesex, gentleman, for "*Improvements in pipe-joints.*" A communication. Patent dated June 3, 1868.

This invention relates more particularly to gas and water pipes, and has for its object the facilitating the laying of such pipes across rivers, creeks, and other places difficult of access, and allowing the pipes to adjust themselves to the uneven beds of the same without impairing the said joints. According to this invention the end of one pipe, which serves as the spigot, is cast with bands or projections thereon for the purpose of retaining more securely the lead packing which is poured in after the end of the pipe has been inserted into the socket of the next pipe. This socket, in place of being cylindrical, as heretofore, forms a portion of a hollow sphere, so that the packing on the end or spigot of one pipe is free to turn in any direction in the socket or faucet of the other pipe, after the manner of a ball and socket joint.

1818.—LEMUEL WELLMAN WRIGHT, of Brooklyn, in the state of New York, U.S.A., for "*Improvements in meters for water and other liquids.*" Provisional protection only obtained. Dated June 3, 1868.

According to this invention a shaft is made use of, around which is an inclined or screw-formed blade, making one or more turns around the said shaft, and the exterior edge of this blade is made to set closely to, but not touch, a cylindrical case, within which the said shaft and blade are contained and mounted, so asto revolve freely by the motion of the water or other liquid as it passes through the said case, the water being led in near one end of the said case, and taken away near the other end by pipes. The size of the case is such as to contain a given number of gallons, or other standard of capacity, and this amount of liquid passing through the case will give the shaft and screw-blade as many revolutions as there are complete turns of the blade round the shaft. The record of the number of revolutions is made by dials or index-hands; the shaft aforesaid projects through the casing into a box containing the wheels, and a tooth on the said shaft moves the first wheel one tooth every revolution of the shaft and blade, and on the axis of this first

wheel is a tooth acting upon the teeth of the second wheel to move that one tooth every revolution of the first wheel, and so on.

1839.—WILLIAM FIRTH, of Burley Wood, near Leeds, in the co. of York, gentleman, for "*Improvements in deodorizing petroleum and other oils.*" Provisional protection only obtained. Dated June 4, 1868.

Palm oil and other oils have heretofore, in some cases, been deodorized by blowing air through them, whilst they are kept heated in a suitable vessel to a temperature of from 170° to 230° Fahr. In place of using the air at such a pressure only as is necessary to cause it to flow through the oil, according to this invention it is employed at a high pressure, more especially towards the end of the operation, so that when it enters the oil it expands greatly, thereby becoming intimately mixed with the oil, and also cooling it rapidly below the temperature of the air, at which temperature it is preferred to commence the treatment, and not to heat the oil as heretofore. The air, when used under these conditions, rapidly removes the odour from the oil, and it may at the same time, from the cold it induces, be caused to chill a small proportion of it.

1848.—FRANCIS REDDICLIFFE, late of Seglenlas Mine, Llanidloes, in the co. of Montgomery, now of Hendre Mine, in the co. of Flint, mine agent, for "*Improved mechanical arrangements applicable to pump-buckets, and partially applicable to pistons.*" Patent dated June 5, 1868.

This invention refers to a former patent, granted to the present patentee, dated June 21, 1867 (No. 1821), which comprised certain improvements in pump-buckets and pistons, whereby (as described in the specification thereof) packing could, from time to time, be effectually adjusted as the same became worn away. In lieu of the arrangements described in the said specification, with the exception of the fork at the bottom of the pump, which may be the same as described in that specification, the following arrangements are employed:—The bucket is constructed in divisions, one division being recessed to receive the packing or gearing, and another division being of sufficiently large diameter to allow the first-mentioned division to fit therein, the packing or gearing being fitted in the recessed portion aforesaid. Across the recessed division a bar is secured, through which a screw or adjuster attached to the fork above mentioned (or otherwise) works, and by operating on which, by means of a bar at the bottom of the pump, in similar manner to that described in the specification of the former patent, or by other means, one of the divisions is caused to move within the other, and the packing or gearing is thereby pressed out and adjusted. The bar at the bottom of the pump should be adjustable by means of rack and pinion, or other suitable mechanism, and a bar should be used across the unrecessed division to carry the fork and screw.

1855.—ANDREW STEPHEN, of the Middlesex Hospital, doctor of medicine, for "*Improvements in apparatus for ventilating buildings and other structures.*" Provisional protection only obtained. Dated June 5, 1868.

This invention consists essentially in the use of a slide, somewhat similar to a drawer, but surrounded on all sides with perforated metal, wire gauze, or other suitable material, whilst the front of the said slide is solid or non-perforated. This slide (which may be of any shape) is made to fit easily into a corresponding opening or frame, made or fitted in the wall of the apartment to be ventilated, and the slide is drawn out more or less, so as to expose more or less of the perforated surface, according to the degree of ventilation required. These slides—which, when closed, are flush, or nearly so, with the face of the wall, are intended to be situate at convenient or suitable intervals near the floor of the apartment, for the admission of air, which is dispersed upwards and laterally, but cannot rush directly forward into the interior of the apartment, by reason of the obstruction presented by the front end of the slide. The foul air is allowed to pass off through any convenient outlets, provided with regulating-valves or dampers, and situate near the ceiling.

1868.—JAMES YOUNG, of Kelly, in the co. of Renfrew, N.B., gentleman, for "*Improvements in treating hydrocarbons.*" Provisional protection only obtained. Dated June 6, 1868.

This invention consists essentially in heating and distilling hydrocarbons, such as paraffin, paraffin oil, and petroleum, in contact with or from alkalies and alkaline earths.

1872.—GEORGE WATSON, of Bromley Street, Commercial Road, in the co. of Middlesex, engineer, WALTER JOSEPH BAKER, and SAMUEL THOMAS BAKER, both of Southwark Bridge Road, in the co. of Surrey, civil engineers, for "*An improved artesian tube well and lifting force-pump.*" Patent dated June 8, 1868.

The artesian tube well and lifting force-pump of this invention consists of a a series of tubes in combination with a peculiar instrument which is hereinafter called the penetrator. The tubes may be joined in the usual manner, or by screwing one length into another, the bottom length having a stout collar with set screws to prevent the penetrator falling out. The tubes are, moreover, provided with valves, as hereinafter described. The penetrator is made of iron or steel; is fluted or grooved on the outside, either straight or in the form of a rifle groove; and made so as to revolve easily in the bottom tube, and by its motion pass the *débris* up outside the tube. The bottom tube has orifices to admit water, and a foot-valve of any description to prevent the water returning. When a sufficient length is obtained, by adding other tubes, another foot-valve is placed, and above this the bucket-valve or plunger works in the tube or pipe, this part thus forming the pump-head or delivery-valve, which is made either of india-rubber, or of metal, or of both combined, is placed above. The pump-rod can be made of tube or pipe, to serve for charging the pump with water, this rod working through the head and delivery valves, which are made with a guard forming a stuffing-box for the passage of the said piston-rod or pipe.

1891.—JOHN CARTER, trading as Lee and Carter, of 440, Strand, in the co. of Middlesex, bookseller, for "*An improved portable closet or commode seat.*" Provisional protection only obtained. Dated June 10, 1868.

This invention consists in constructing the seat of or for a commode or water-closet in pieces, and hinging or jointing them together, so that they may fold or pack into a small compass.

1902.—WILLIAM HENRY WESTWOOD, of the firm of Westwood and Wrights, of Dudley, in the co. of Worcester, manufacturers, for "*Improvements in gasholders, gas purifiers, and other apparatus used in the manufacture and distribution of gas for illumination.*" Patent dated June 10, 1868.

Gasholders, gas purifiers, and other apparatus used in the manufacture and distribution of gas for illumination, as ordinarily made are liable to corrosion and decay by the action of the sulphur, naphthaline, and other matters contained in the gas, and the ordinary method of making the joints of the said gasholders, purifiers, and apparatus is so imperfect as to occasion great loss of gas by leakage at the said joints. This invention has for its object the prevention of the corrosion and leakage of gasholders, gas purifiers, and other apparatus used in the manufacture and distribution of gas for illumination.

The invention consists, firstly, in coating or covering with lead, or an alloy of lead, the wrought or cast iron of which the said gasholders, gas purifiers, and apparatus are made, so as thereby to protect the said wrought or cast iron from the corrosive action of the sulphur and other matters contained in the gas. It is preferred to effect the coating by immersing or partly immersing the plates, sheets, or other parts, in a bath of melted lead or alloy of lead, or other convenient means may be employed.

The invention consists, secondly, in the following methods of forming the joints of gasholders and apparatus used in the manufacture and distribution of illuminating gas composed of plates or sheets of iron. When the plates have not been coated all over with lead or an alloy of lead, the edges, and those portions of the sides near the edges, are coated with lead or an easily fused metal or alloy. The coating may be effected either by immersion of each edge of the plates, two or three inches deep, in a bath of the melted metal or alloy, or the said metal or alloy may be applied in any convenient manner. After the plates have been put together and riveted, the overlapping edges are soldered together either by fusing the metal or alloy on the edges of the plates by a gas or other blowpipe, or by the use of solder and a soldering-iron, or by any other convenient process.

The manner in which it is preferred to carry this part of the invention into practice is as follows:—The edges of the sheets or plates having been punched, are cleaned either by grinding or other mechanical means, or by chemical means, such as immersion in acid or other pickle. The cleaned edges are afterwards coated with lead or an alloy of lead to a breadth of about 2½ inches. The rivets to be used in securing the coated edges of the plates together are treated and coated with lead or an alloy of lead in a similar manner. The edges of the sheets are next placed together and riveted in the usual way. A blowpipe is then used supplied with ordinary illuminating gas and a stream of compressed atmospheric air, and the ignited mixture is projected upon the riveted joints, by which means the lead or alloy of lead between the sheets or plates of iron, and also that upon the rivets, is fused or melted, and the said parts are thereby soldered together. A portion of solder, such as lead or an alloy of lead and tin in any convenient proportions, is then applied along the edges of the sheets and rivet-heads, or wherever else it may be necessary; there is thus produced a perfectly continuous metallic junction which effectually prevents leakage. When the plates have been wholly coated with lead or an alloy of lead, according to the first described part of the invention, their edges may be soldered in a similar manner. In case any of the joints made and soldered together as described become leaky or unsound, they may be readily repaired by the use of the blowpipe and solder in the manner before described. Where the plates are neither wholly coated nor coated on their edges, the junctions of the plates are made tight in either of the following ways—that is to say, either a tape or strip of soft metal or alloy is put between the edges of the plates and parallel thereto, which tape or strip is compressed between the edges of the plates when they are riveted together, and forms a gas-tight joint; or one or more wires or ropes of soft metal or alloy are put between the edges of the plates, or those portions of the plates which come into contact when the plates are riveted together are coated with a coating of soft metal or alloy, and one, two, or more hard metallic wires or wire ropes are placed between the plates. When the said plates are riveted together the said wires or ropes become embedded in the said soft metal, and form a gas-tight joint.

1908.—STANISLAUS JOSEPH PARIS, DAVID DRUMMOND, and DANIEL HAMER, all of Manchester, in the co. of Lancaster, for "*Certain improvements in valves.*" Provisional protection only obtained. Dated June 11, 1868.

The invention relates to valves which open and close to control the passage of liquids or fluids, and is designed for the purpose of diminishing or removing the pressure thereof, and consequently the effect of such pressure on the seatings or frictional surfaces of the said valves.

The improvements consist in introducing the liquid or fluid through the centre of and in a direction concentric with the axis or bore of the valve, and at right angles to the direction of its motion, and in such a manner that the pressure may be exerted evenly around the internal surfaces of the valve, whereby the bearing or frictional surfaces are relieved from pressure. The valve so constructed may be applied for many purposes, and the ducts or openings may be formed therein in different positions to suit the peculiar purpose to which the valve is applied; but all supply and exhaust ducts or ports open from the internal or hollow part towards the external—that is, at about right angles to the direction of the passage of the fluid or liquid, and the valve is moved in an oscillatory manner—that is, to and fro in the radius of a circle, by means of cams and rods, or other well-known means, applied to the valve-spindle.

1915.—FREDERIC WARNER, of Jewin Crescent, in the City of London, engineer and founder, for "*Improvements in obtaining water.*" Provisional protection only obtained. Dated June 11, 1868.

The invention consists in forming a bore-hole in the earth, which is lined with a light metal tube in the usual manner, care being taken that the earth is closely rammed in around the lining-tube at the top. Within the lining-tube is inserted a pipe, reaching to the bottom of the hole, or nearly so. It is preferred that the pipe should terminate a short distance above the water level in the bore-hole, so that the first action of the pump may be partially to exhaust the air in the space between the lining-tube and the inner pipe; thus an imperfect vacuum is formed, which tends both to suck water into the bore-hole, and to aid the pump in its further action. An air-tight joint is made between the lining-tube and the pipe, at or near the top of the lining-tube, and a pump is connected with the interior pipe, which is thus the suction-pipe of the pump.

1930.—CLEMENT ROSTAING, residing at 29, Rue le Marois, and ELIE VIVET, of 43, Rue des Bourdonnais, both in Paris, in the empire of France, for "*An improved material suitable for making steam, water, and gas-tight joints, and for similar uses.*" Patent dated June 12, 1868.

This invention has for its object an improved material suitable for making water and gas-tight joints, and for similar uses. Two sheets of wire cloth are taken, of any suitable dimensions, and metal, such as iron, copper, or brass; between them is placed a sheet of lead, and they are passed together through rollers, so as to press the wire cloth into the substance of the lead; the whole thus forms one and the same body. Other suitable means may be resorted to for combining the wire cloth and the lead. The material thus made is placed and passed between the parts or junction of any apparatus for sustaining pressure, such as steam, liquid, or gas pressure, and for preventing the egress or ingress of such steam, liquid, or gas.

1948.—LEON STANISLAS THOMASSIN, of 31, Rue d'Enghien, Paris, in the empire of France, chemist, for "*Process and apparatus for producing a combustible and lighting gas or carburetted hydrate of oxide of sypil, C_6, H_8, O_6, HO.*" Provisional protection only obtained. Dated June 15, 1868.

The subject of the present invention is a combustible and lighting gas or

carburetted hydrate of oxide of sypil, the chemical formula of which is C_8, H_8, O_8, HO—that is to say, it contains six equivalents of sypil, eight equivalents of hydrogen, six equivalents of oxygen, and one equivalent of water. It is produced by simultaneously casting on incalescent coke contained in a retort heated to a red heat, first, a mixture of water and glycerine; and secondly, a jet of olein oil or carburetted hydrogen, the proportions of which would vary according to the degree of richness or of lighting power desired. In a kiln are placed a number of retorts, three, five, or seven, according as required; they are of cast iron, and are filled with pieces of coke broken up and mixed together with fragments of iron. The foremost end of each retort is provided with a knee-pipe forming a plug or stopper, which is attached by means of bolts; these plugs are traversed by two iron tubes which enter a short distance into the interior of the retorts; the exterior parts of these tubes are furnished with taps, and are bent in the shape of a U, and terminate with funnels which are arranged under the taps of two reservoirs. The first of these reservoirs is filled with a mixture of water and glycerine, in the proportions of 100 parts of water to three parts of glycerine; the second reservoir is placed above the retort, so that it is kept constantly heated, and is filled with olein. The retorts being heated to a red heat, and kept so by an oil or coke fire placed in a grate below them, the taps are opened, and the liquids contained in the reservoirs are introduced in the retorts by the tubes, the flow of these liquids being so arranged that they pour in constantly in the proportions of 100 parts of water, three parts of glycerine, and one of olein. In coming in contact with the heated coke and iron the following reaction takes place:—The water saturated with glycerine resolves into hydrogen gas, bicarburet of hydrogen, magnetic iron, and a little carbonic acid; the fatty matter furnishing the bicarburet of hydrogen also decomposes. The gas formed escapes at the back or hind end of the retorts by means of tubes which connect them with a collecting-pipe, which conducts them to a bath or cistern. The decomposed water and fatty matter are collected in a reservoir provided with a waste-pipe, the gas reaching the bath or cistern of water made in sheet iron of any desired form hermetically closed, and is filled up to a certain height, and in which the end of the collecting-pipe plunges. The carburetted gas cools, and then passes through an elbow-pipe to a serpentine pipe arranged in the interior of the washing-cistern, where it gets rid of the condensed water and fatty matter in suspension, which pass with the gas into the serpentine pipe, and accumulates in a recipient at the bottom of the pipe, from which they are discharged into a reservoir by means of a pipe; the gas then ascends by another pipe into an iron cylindrical refiner filled with pieces of coke, sawdust, wood, and an alkali of some sort. This refiner is divided by a partition, which makes or forces the gas to pass twice through the height of the material it contains before it escapes by a pipe at the top, from whence it passes to another and final refiner of the same form and material as the last named, the interior of which is furnished with floors or stages pierced with holes, and between which floors moss, cotton, or any other light or spongy substance slightly steeped in benzoin, petroleum, or schist; from thence the gas passes through a pipe into a gasometer of any description or dimensions to be finally distributed therefrom.

1954.—WILLIAM CAMERON SILLAR, of 62, Cornhill, in the City of London, bullion broker, ROBERT GEORGE SILLAR, of 3, Grange Road, Upper Norwood, gentleman, and GEORGE WILLIAM WIGNER, of Grove Lane, Camberwell, both in the co. of Surrey, chemist, for "*Improvements in dedorizing and purifying sewage and making manure therefrom.*" Patent dated June 15, 1868.

According to this invention it is proposed to add to the sewage to be purified a mixture consisting of the following ingredients—viz., alum, blood, clay, magnesia, or one of its compounds (by preference the carbonate or the sulphate), manganate of potash or other compound of manganese, burnt clay, otherwise known as ballast, chloride of sodium, animal charcoal, vegetable charcoal, and magnesian limestone. Of these substances the manganese compound, the burnt clay, chloride of sodium, and magnesian limestone, may be omitted, and it is not essential that both animal and vegetable charcoal should be used. If any of the ingredients named should, from any cause, be present in sufficient quantity in the sewage, it may, of course, be omitted from the mixture. The proportion in which the ingredients are to be used varies according to the nature of the sewage to be purified.

1980.—CHARLES HENGST, of St. George's Terrace, engineer, and HENRY WATSON, of Grove Road, gas-fitter, both of Fulham, in the co. of Middlesex, for "*An improved mode of and means for manufacturing gas for lighting and heating purposes.*" Patent dated June 18, 1868.

This invention consists of certain conformations and mechanical arrangements in apparatus to effect the production of carburetted hydrogen gas from hydrocarbonaceous spirit for illuminating and heating purposes. And also in imparting to the gas so produced an additional equivalent of hydrogen and oxygen during the process of volatilization, the hydrogen and oxygen being obtained by the admixture of atmospheric air with the vapour and gaseous matter evolved from the hydrocarbonaceous spirit. And furthermore, in purifying and abstracting from the gas when evolved and combined all vaporous matter by filtration and other means through various mediums, thereby leaving nothing but pure dry non-condensable gaseous matter to be consumed by the ordinary methods of combustion for illuminating and heating.

Other methods may be employed for the volatilization of carburetted hydrogen gas from fluid hydrocarbon, by letting a small thin stream of this fluid fall between two revolving brushes in an air-chamber, or the revolving brushes may revolve at a high velocity partially immersed in the fluid, each brush having a hollow axis for the air to pass through, which would divide the hydrocarbon, and cause a large amount of gaseous matter to be evolved therefrom.

Another method is a revolving centrifugal wheel, which is perforated on its periphery by minute holes for the fluid to be thrown off in a spray through these holes, thus dividing and exposing the particles to the action of atmospheric air. This revolving wheel has a hollow axis below and above. That portion which is above the wheel draws in atmospheric air from without the chamber, but that portion below the wheel, which is partially immersed in the fluid, and which has on its inside a worm or helix, draws up the fluid into the wheel; hence the fluid from below and the air from above mix in the interior of the wheel, and are thrown off and commingle together in the chamber.

Another method of evolving the gas and vapour from the hydrocarbonaceous spirit is to force a series of small jets of dry air in and above the fluid, when a rapid evaporation would take place, and the gaseous and vaporous matter would be aërated at the same time. From either of the methods above described it may be taken into a filtering-chamber, so as to take away the vapour or condensable matter from the gaseous or non-condensable matter as before described.

1981.—WILLIAM SEGGIE CARR, of the city and state of New York, U.S.A., for "*Improvements in water-closets.*" Patent dated June 18, 1868.

This invention is only described in connexion with the drawings.

1988.—MATTHEW PIERS WATT BOULTON, of Tew Park, in the co. of Oxford, gentleman, for "*Improvements in apparatus for obtaining motive power by the combustion of inflammable aëriform fluids.*" Patent dated June 19, 1868.

This invention relates to improvements in engines in which the ignition of an inflammable aëriform mixture is used as a source of power. It has for its object improvements in the construction of such engines, and in the mode of lighting the inflammable mixture employed. In the specifications of patents granted to the patentee on the 10th of March, 1866 (No. 738), and the 8th of July, 1867 (No. 2000), an apparatus is described in which the ignition and expansion of an inflammable aëriform mixture is used to compress air or aëriform fluid in a vessel, the products of combustion being afterwards employed to generate steam or heat air or fluid, which in conjunction with the compressed air or fluid is used to work an engine. The present variation in the construction of such engines or apparatus is as follows:—After the expansion caused by the ignition of the inflammable mixture has driven the piston to the end of the cylinder and compressed the air or fluid, the return of the piston is caused by introducing into the cylinder a portion of the elastic fluid under pressure. A small quantity of this being admitted, the piston receives an impulse which causes it to perform a full stroke, expelling the products of combustion on the one side, and drawing air or other fluid through valves to fill the space in the cylinder on the other side. A similar method may be employed for causing the return movement of the piston necessary for the admission of the charge of inflammable mixture. A small portion of compressed air or elastic fluid under pressure may be admitted by a valve to act on the piston or on a plunger connected with it, giving it an impulse which causes it to perform the necessary movement. This movement may also be effected by a spring or by a rod moved by the engine by means of a cam, eccentric, or other suitable mechanism. In engines of this description the air or fluid compressed by the expansion of the ignited mixture may be driven immediately into the boiler so as to mingle with the steam in it. In order to lubricate and keep cool the piston acted on by the iguited mixture, water may be drawn during its return stroke through a valve into the cylinder, and this being expelled during its working stroke through a valve into the boiler serves for its feed.

In order to utilize more efficiently the action of the heat, the charge of inflammable mixture may be compressed previous to ignition. For this purpose the following construction may be employed :—A rod or plunger is fitted to work through a stuffing-box in the bottom of the cylinder, and this rod is provided with a shifting catch which fits into a recess in the piston. The rod and catch are operated on by a cam or other convenient apparatus worked by the engine, so that the rod can be made to move to and fro, and to hold the piston and release it at suitable times. When the piston has descended to the bottom of the cylinder, and thus cleared it of the products of combustion, the rod is protruded into the cylinder and raises the piston a certain distance, taking hold of it by means of the catch. During this movement the inflammable mixture enters the cylinder at or near atmospheric pressure, and charges the space under the piston. The piston is then drawn back by the movement of the catch-rod compressing the charge to a pressure of several atmospheres, or to such pressure as may be desired. The catch is then released, and the charge is simultaneously ignited. The expansion of the ignited mixture drives the piston as already described, and the action is repeated. In this method of operating, whilst the initial pressure of the ignited charge may be rendered very high, that of the fluid acting in the working cylinder may be kept as low as desired, and thus the inconveniences attending the use of very high pressure and great expansion in the ordinary method of working may be avoided.

The constructions above described may be modified by dispensing with the use of the steam, the products of combustion being discharged after they have performed work in propelling the piston which compresses the air or fluid employed to work the engine.

APPLICATIONS FOR LETTERS PATENT.

276.—GEORGE HAWKSLEY, of Montrose Villas, Caledonian Road, in the co. of Middlesex, engineer, for "*Improvements in the manufacture of ventilators and chimney-pots.*" Jan. 29, 1869.

281.—SYDNEY SMITH, of the Hyson Green Brass-Works, near Nottingham, for "*Improvements in taps or valves for regulating the flow of steam, water, and other fluids.*" Jan. 29, 1869.

282.—GEORGE HAWKSLEY, of Montrose Villas, Caledonian Road, in the co. of Middlesex, engineer, for "*Improvements in pumps, and in apparatus connected therewith.*" Jan. 29, 1869.

289.—THOMAS WHIMSTER, of Perth, in the co. of Perth, N.B., gas engineer, for "*Improvements in apparatus for exhausting, washing, and forcing gaseous or aëriform bodies.*" Jan. 30, 1869.

314.—NICHOLAS VOICE, of Handcross, in the co. of Sussex, plumber, for "*Improvements in apparatus for regulating the flow of water or other fluids, applicable to water-closets and other purposes.*" Feb. 2, 1869.

328.—JAMES HIGGS TYRRELL, of Hadleigh, Rochford, in the co. of Essex, for "*An improved method of measuring and drawing off any given quantity of liquid from a vat or other vessel containing it in bulk, and in registering the quantity so drawn off or abstracted from time to time.*" Feb. 3, 1869.

344.—THOMAS PANKHURST the elder, and THOMAS PANKHURST the younger, both of Clover Street, Chatham, in the co. of Kent, builders, for "*Improvements in gully-traps.*" Feb. 4, 1869.

356.—WALTER BLUNDELL, of 177, Upper Thames Street, in the City of London, gentleman, for "*Improvements in guards or apparatus applicable to chimneys for the prevention of down draught.*" Feb. 5, 1869.

357.—JOHN PAGE, of Glasgow, in the co. of Lanark, N.B., civil engineer, for "*Improvements in pipe-joints and in cement for the same, and applicable otherwise.*" Feb. 5, 1869.

371.—ROBERT SNOOK, of 18, New Street, Horselydown, engineer and brass-founder, for "*Improvements in cocks, taps, and valves for regulating the supply of steam, or water, or other fluids.*" Feb. 6, 1869.

389.—HENRY JOHN RICHMAN, of 48, Porchester Terrace, in the co. of Middlesex, for "*Improvements in fans or apparatus for forcing or drawing air.*" A communication. Feb. 8, 1869.

390.—FLEEMING JENKIN, of 5, Fittis Row, Edinburgh, professor of civil engineering in the Univeraity of Edinburgh, for "*Improvements in apparatus for producing electric light.*" Feb. 8, 1869.

403.—JOHN HENRY JOHNSON, of 47, Lincoln's Inn Fields, in the co. of Middlesex, gentleman, for "*Improvements in apparatus for heating and ventilating.*" A communication. Feb. 9, 1869.

411.—SAMUEL MELLOR, of Park Terrace, Old Ford, Victoria Park, in the co. of Middlesex, for "*Improvements in the construction of pumps for raising and forcing water and other liquids.*" Feb. 10, 1869.

423.—JOHN CARTER, of Birmingham, in the co. of Warwick, boat-builder, for "*Improvements in water-closets.*" Feb. 10, 1869.

429.—JAMES YOUNG, of Limefield, in the co. of Mid Lothian, N.B., gentleman, for "*Improvements in apparatus for measuring the pressure of gases and the force of aëriform or gaseous currents.*" Feb. 11, 1869.

432.—BENJAMIN PRYOR STOCKMAN, of 23, Abingdon Street, Westminster, in the co. of Middlesex, civil engineer, for "*Improvements in meters applicable to measuring water.*" Feb. 11, 1869.

GRANTS OF PROVISIONAL PROTECTION.

3009.—JOHN FREDERICK GUSTAVE KROMSCHRŒDER, of Gloucester Street, Camden Town, in the co. of Middlesex, gas engineer, for "*Improvements in apparatus for generating an inflammable gas or vapour suitable to be burnt at gas-burners to yield light and heat.*" Oct. 1, 1868.

183.—EDWARD BARCROFT, of Rawtenstall, in the co. of Lancaster, plumber and glazier, for "*Improvements in the construction of cocks, taps, or valves for controlling the flow of water or other liquids.*" Jan. 20, 1869.

208.—THOMAS COOK, of Old Kent Road, in the co. of Surrey, engineer, and JOHN WATSON, of Victoria Chambers, Westminster, in the co. of Middlesex, engineer, for "*Improvements in the mode of, and apparatus for producing and applying motive power, also applicable for measuring the flow of gas and other fluids.*" Jan. 22, 1869.

227.—CLINTON EDGCUMBE BROOMAN, of the firm of Robertson, Brooman, and Co., of 166, Fleet Street, in the City of London, patent agents, for "*Improvements in the construction of cocks or valves.*" A communication. Jan. 25, 1869.

243.—WILLIAM ROBERT LAKE, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, consulting engineer, for "*Improvements in ventilating apparatus.*" A communication. Jan. 26, 1869.

245.—HENRY LAW, of Essex Street, Strand, in the co. of Middlesex, civil engineer, for "*Improvements in apparatus for connecting soft metal and other pipes, and for attaching cocks and other fittings thereto.*" Jan. 26, 1869.

248.—COLIN MATHER, of Salford, in the co. of Lancaster, engineer, for "*Improvements in machinery or apparatus for singeing fabrics by gas flames.*" Jan. 27, 1869.

276.—GEORGE HAWKSLEY, of Montrose Villas, Caledonian Road, in the co. of Middlesex, engineer, for "*Improvements in the manufacture of ventilators and chimney-pots.*" Jan. 29, 1869.

281.—SYDNEY SMITH, of the Hyson Green Brass-Works, near Nottingham,

Share List of Metropolitan Gas Companies.

Number of Shares issued.	Amount per Share.	Name of Company.	Amount paid up p. Share.	Dividend p. Cent. p. Annum.	Price per Share.
	£		£ s. d.	£ s. d.	£
8000	10	Anglo-Romano	10 0 0	10 0 0	11 — 12
5000	20	Bahia (Limited)	20 0 0	3 0 0	13 — 15
1000	20	Do., preference	20 0 0	10 0 0	23 — 24
750	20	Do., do., redeemable	20 0 0	10 0 0	20 — 22
40000	5	Bombay (Limited)	5 0 0	4 0 0	3⅜ — 4
10000	5	Do., third issue	4 0 0	4 0 0	2⅞ — 3
10000	20	British (Limited) (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton [Potteries], Trowbridge, & Holywell.)	20 0 0	10 0 0	29½ — 30¼
12000	50	*Chartered*	50 0 0	7 0 0	56 — 57
6000	50	Do.	45 0 0	7 0 0	49 — 50
10000	20	*City of London*, A shares	20 0 0	8 0 0	24 — 26
10000	10	Do., B shares	10 0 0	4 0 0	6 — 7
9629	10	Do., new shares	10 0 0	8 0 0	12 — 13
25000	25	City of Moscow (Limited)	25 0 0	nil.	2¼ — 3¼
17490	25	*Commercial*	25 0 0	10 0 0	35 — 36
20000	20	Continental Union	20 0 0	5 0 0	19¾ — 20
5213	20	Do., preference	20 0 0	7 0 0	20 — 20½
5000	10	*Crystal Palace District*	10 0 0	10 0 0	14 — 15
5000	10	Do., preference	10 0 0	6 0 0	12½ — 13
10000	10	Do., new shares	10 0 0	7 0 0	10½ — 11
4000	50	*Equitable*	50 0 0	10 0 0	66 — 68
4000	25	Do., new shares	25 0 0	10 0 8	33 — 34
23406	10	European (Limited)	10 0 0	11 0 0	15 — 15½
12000	10	Do., new shares (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	11 0 0	7½ — 7⅝
20000	10	*Great Central Gas Consumers*	10 0 0	10 0 0	14¼ — 15
5000	10	Hong Kong (Limited)	10 0 0	6 0 0	8 — 10
26000	50	*Imperial*	50 0 0	10 0 0	62½ — 63½
26000	10	Do., new shares	3 0 0	10 0 0	4⅛ — 4¼
26000	12½	Do., new shares	3 0 0	7 0 0	3⅛ — 3⅜
1300	100	Do., bonds	£100	10 0 0	175 —180
28000	50	*Imperial Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwerp, Bordeaux, Brussels, Cologne, Frankfort-on-Maine, Haarlem, Stolberg, Toulouse, & Vienna.)	43 15 0	16 0 0	98 — 99
400	100	Imperial Mexican (Limited)	100 0 0	nil.	
200	100	Do., new	100 0 0	nil.	
3000	40	*Independent*	40 0 0	10 0 0	51 — 53
3000	10	Do.	10 0 0	5 0 0	7 — 8
3000	20	Do.	15 0 0	7 10 0	15 — 16
7133	50	*London*	50 0 0	10 0 0	67 — 69
5610	25	Do., 1st preference	25 0 0	6 0 0	26 — 28
503	50	Do., 2nd preference	50 0 0	6 0 0	
214	50	Do., 3rd preference	50 0 0	6 0 0	
£18781		Do., 1st preference stock		6 0 0	
£11828		Do., 2nd preference stock		5 0 0	
		Nietheroy, Brazil (Limited)			
12000	5	Malta and Mediterranean (Limited)	5 0 0	5 0 0	3½ — 4
6000	5	Do., preference	5 0 0	7 0 0	.. — 5
30000	5	Oriental (Calcutta)	5 0 0	10 0 0	7½ — 8
30000	5	Do., new shares	1 0 0	10 0 0	1⅜ — 1½
10000	5	Ottoman (Limited)	5 0 0	nil.	1⅜ — 2½
12500	10	Pará (Limited)	10 0 0	7 10 0	8½ — 9
27000	20	*Phœnix*	20 0 0	10 0 0	27½ — 27¾
3600	100	Do., new	35 0 0	7 10 0	36 — 36½
144000	8k.	Do.	100 0 0	5 0 0	74¼ — 75½
5000	20	*Rateliff*	20 0 0	10 0 0	24 — 25
	20	Rio de Janeiro (Limited)	20 0 0	10 0 0	24 — 25
6959	5	Singapore (Limited)	5 0 0	4 0 0	
2000	5	Do., preference	5 0 0	7 10 0	
		Shanghai			
4800	50	*South Metropolitan*	50 0 0	10 0 0	73 — 75
4800	12½	Do., new shares	12 10 0	10 0 0	18 — 19
15000	10	*Surrey Consumers*	10 0 0	10 0 0	14 — 14½
10000	10	Do., new	6 0 0	10 0 0	8 — 8½
9000	4	United General (Limerick)	4 0 0	5 0 0	2 — 2¼
10000	10	*Victoria Docks*	5 0 0	6 0 0	
1500	10	*Wandsworth and Putney*	10 0 0	10 0 0	10 — 12
1500	10	Do.	10 0 0	7 10 0	
1819	10	Do.	10 0 0	7 10 0	
1138	10	Do.	5 0 0	7 10 0	
20000	10	Western (Limited) A shares	10 0 0	10 0 0	14½ — 15
10000	10	Do., B shares	7 0 0	10 0 0	9½ — 10
10000	10	Do., C shares	7 0 0	10 0 0	9½ — 10
20000	10	Do., D shares	1 0 0	10 0 0	1⅜ — 2
8000	5	*West Ham*	7 0 0	7 10 0	½ 7¼ — 7¼
6000	5	Do., new shares	7 0 0	7 10 0	½
551	10	West London Junction (Limited)	10 0 0	6 0 0	
520	10	Do., preference	10 0 0	6 0 0	

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle and Middlesboro'.	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1 (g.m.b.)	3 15 0	2 18 9	2 9 0	3 10 0	3 10 0
1¼ and 2-inch Socket-pipes	7 0 0	5 15 0	5 10 0	6 0 0	7 0 0
2½ and 3-inch ditto	6 10 0	5 5 0	5 0 0	5 15 0	6 10 0
4 and 5-inch ditto	6 0 0	4 15 0	4 10 0	5 5 0	6 0 0
6 inches and upwards ditto	5 15 0	4 5 0	4 0 0	5 0 0	5 15 0
Retorts, 1st fusion, hot blast	5 10 0	4 10 0	4 5 0	5 0 0	5 10 0
Ditto, 2nd ditto, cold ditto	6 10 0	—	—	—	6 10 0
Tank-plates, ¼ thick and above	6 0 0	5 0 0	4 15 0	5 10 0	6 0 0

WROUGHT-IRON TUBING,

Subject to 50 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 14 feet—per foot	1 8	1 1	0 10	0 7	0 5	0 4½
Ditto ditto, from 12 in. to 23½ in.—each	3 0	2 0	1 6	1 1	0 9	0 8
Long Screws, from 12 in. upwards	4 0	2 3	2 0	1 6	1 2	0 11
Bends and Springs	4 3	2 3	1 9	1 3	0 11	0 8
Square Elbows, equal or reducing; Round Elbows, 5 per cent. extra	3 9	2 3	1 9	1 3	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 9
Crosses, ditto, equal or reducing	4 9	3 6	3 0	2 3	1 9	1 6
Iron Cocks	20 9	13 0	10 0	7 3	5 0	3 8
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4½
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 2-quart	15 0	14 0	13 6	13 0	12 0	—

GAS COALS.—*Per Ton.*

Newcastle.—Unscreened:—

Haswells, Nettlesworth Primrose, and South Pelaw	6s. 6d.
Felling, Framwell Gate, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	6 9
Burnhope, Craghead, Charlaw, Derwent, East Castle, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Micklery, New Pelaw, Pelaw Main, Ravensworth, Seaham, South Moor Pelton, South Leverson, Townley Main, Tyne Main, West Pelaw, Wearmouth Hutton, and Witton	7 0
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	7 3
Brancepeth, Dean's Primrose, Londonderry Gas, New Pelton, Pelton, South Peareth, Stella, Urpeth, Washington Hutton, and West Leverson	7 6
Ramsay's Newcastle Cannel	15 0
Wigan Cannel (at Liverpool)	17 0
Scotch Cannel:—	
Boghead—at Boness, 38s.; at Leith	38 6
Muirkirk	27 0
Kirkness, beat (at Burntisland)	28 6
Capeidrae, 1st quality (at ditto)	28 6
Ditto, 2nd ditto (at ditto)	18 6
Cowdenbeath	12 0
Lesmahago (at Glasgow)	31 6
Ditto (at Granton)	32 6
Arniston	27 6
Wemyss, L.o.b.	22 6
Haywood, Wilsontown (at Granton)	23 0
Pirnie, or Methill	17 0
Lothian's Cannel (f.o.b. at Leith)	26 0
Bo'ness Cannel (at Bo'ness)	19 0
Myles' Cannel	23 6
Lochore Parrot (at Burntisland)	28 0
Lanemark (at Glasgow)	18 0
Elphinstone Tower (at Leith)	20 0
Coppa Cannel (on railsat Birkenhd.)	14 9
Ditto ditto (ditto at Connah's Quay)	14 3

FREIGHTS.

Coastwise—Newcastle.—Per Ton:—

Chatham and Rochester	5 6
Cork	8s. to 8 6
Dover, Folkestne, & Ramsgate	6 0
Dublin	8s. to 9 6
Exeter Quay	8s. 6d. to 9 0
Ipswich	4 6
London (from Leith)	5 6
London (Pool)	6 0
Lowestoft and Yarmouth	5 0
Portsmouth & Southampton	7s. to 7 6
Plymouth	6 3
Shoreham	7 0
Whitstable	6 0
Weymouth	7 9
Foreign.—Per Keel:—	
Barcelona	£17 0
Bordeaux	13 0
Boulogne and Calais	7 0
Cadiz	12 0
Cronstadt	—
Copenhagen	—
Genoa	17 5
Hamburg	9 0
Havre de Grace	£8 to 8 5
Leghorn	17 0
Lisbon	£10 10s. to 10 15
Rotterdam	—
Stettin	—
Trieste	15 10
Venice	19 0

SUNDRIES.

Best Nstle. Fire-bks., p. 1000, £2.10s. to £2	15 0
Cliff's Fire-bks. (at Wortley), p. 1000	2 15 6
Ingham's ditto (at Wortley), p. 1000	2 15 0
Farnley Iron Co.'s Fire-bks. (at Wortley), less discount	2 17 0
Fire-clay Retorts, p. ft. run, 8s. 6d. to	0 7 6
Tough Cake Copper, p. ton	81 0 0
English Pig Lead, p. ton	19 2 6
Welsh Bar Iron (in London), p. ton	6 12 6
Foreign Spelter, p. ton	21 7 6
English Block Tin, p. ton	116 0 0
Bancs, p. ton	115 0 0
Tarred Rope Yarn, p. cwt.	1 0 0

for "*Improvements in taps or valves for regulating the flow of steam, water, and other fluids.*" Jan. 29, 1869.

282.—GEORGE HAWKSLEY, of Montrose Villas, Caledonian Road, in the co. of Middlesex, engineer, for "*Improvements in pumps, and in apparatus connected therewith.*" Jan. 29, 1869.

289.—THOMAS WHIMSTER, of Perth, in the co. of Perth, N.B., gas engineer, for "*Improvements in apparatus for exhausting, washing, and forcing gaseous or aëriform bodies.*" Jan. 30, 1869.

314.—NICHOLAS VOICE, of Handcross, in the co. of Sussex, plumber, for "*Improvements in apparatus for regulating the flow of water or other fluids, applicable to water-closets and other purposes.*" Feb. 2, 1869.

328.—JAMES HIGGS TYRRELL, of Hadleigh, Rochford, in the co. of Essex, for "*An improved method of measuring and drawing off any given quantity of liquid from a vat or other vessel containing it in bulk, and in registering the quantity so drawn off or abstracted from time to time.*" Feb. 3, 1869.

NOTICES TO PROCEED.

2944.—JOHN WRIGHT, of Birmingham, in the co. of Warwick, gas stove and burner manufacturer, and WILLIAM HENRY WILLIAMS, also of Birmingham aforesaid, machinist, for "*Certain improvements in the manufacture of gas-burners.*" Sept. 25, 1868.

2953.—HENRY DAVEY, of 9, Victoria Chambers, in the city of Westminster, engineer, for "*Improvements in steam-engines, part of which is applicable to steam-pumps.*" Sept. 26, 1868.

2959.—PETER SPENCE, of Newton Heath, Manchester, in the co. of Lancaster, manufacturing chemist, for "*Improvements in the manufacture of copperas, applicable to the purification of illuminating gas, and to other purposes.*" Sept. 26, 1868.

2972.—ROBERT DUNCAN, of Billericay, in the co. of Essex, gentleman, for "*Improvements in earth-closets and commodes.*" Sept. 28, 1868.

2980.—EDWARD THOMAS HUGHES, of the firm of Hughes and Son, of 123, Chancery Lane, London, patent agents, for "*Improvements in gas-burners.*" A communication. Sept. 29, 1868.

2987.—EDWARD HORTON, of Birmingham, in the co. of Warwick, gas-chandelier maker, for "*Certain improvements in the manufacture of chandeliers and other gas-fittings, having especial reference to the pulley-wheels, rosettes, and balance-weights, smoke-shades, Argand burners, and other similar parts used therein.*" Sept. 30, 1868.

3009.—JOHN FREDERICK GUSTAVE KROMSCHRŒDER, of Gloucester Street, Camden Town, in the co. of Middlesex, gas engineer, for "*Improvements in apparatus for generating an inflammable gas or vapour suitable to be burnt at gas-burners to yield light and heat.*" Oct. 1, 1868.

3043.—JOHN RICHARDSON WIGHAM, of Albany House, Monkstown, in the co. of Dublin, Ireland, for "*Improvements in illuminating lighthouses, and in apparatus employed for that purpose, which apparatus is also applicable to the manufacture of illuminating gas generally.*" Oct. 6, 1868.

3044.—GEORGE GRAVELEY, of Bow, in the co. of Middlesex, engineer, for "*Improvements in steam-pumps and other engines actuated by steam or other motive fluid, and in combining sea-water distilling apparatus with steam-pumping and steam-cooking apparatus.*" Oct. 6, 1868.

3217.—JOHN JOSEPH PARKES, of 17, London Street, Paddington, in the co. of Middlesex, gas engineer, for "*Improvements for making stoves for cooking and heating purposes by gas and other means.*" Oct. 21, 1868.

3403.—HENRY LEONARD BENNISON, of Greenwich, in the co. of Kent, engineer, for "*An improved rotary engine and pump to be driven by water or steam power.*" Nov. 10, 1868.

188.—FREDERICK LIPSCOMBE, of 233, Strand, in the co. of Middlesex, water-filter manufacturer, for "*Improvements in purifying and storing water and in the apparatus employed therein.*" Jan. 20, 1869.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

274.—WILLIAM WILLMER POCOCK, "*Improvements in gas-meters.*" Jan. 27, 1866.

346.—THEOPHILUS ALFRED GILBERT WILLINGTON, "*Improvements in apparatus for heating conservatories, apartments, or boilers by means of gas.*" Feb. 3, 1866.

PATENT WHICH HAS BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

290.—GEORGE MANWARING, "*Improvements in flushing apparatus for closets, sewers, and other water services.*" Feb. 4, 1862.

Advertisements.

C. A. S. VICKARY,

(ADMINISTRATRIX TO THE LATE JOHN VICKARY,)

GAS ENGINEER AND CONTRACTOR, IRON AND BRASS FOUNDER,

EXE ISLAND, EXETER,

Tenders her best thanks to the various Gas Companies in **England, Ireland, and Wales,** for the very liberal and kind support received by her lamented husband for the last **22 years,** during which period he erected and extended more than **200 Gas-Works.** She respectfully solicits a continuation of that support, and begs reference to the following testimonial:—

Plymouth and Stonehouse Gaslight Company.

Sir,—I have much pleasure in testifying that the 100-foot Telescope Gasholder and Cast-Iron Tank, erected by you for this Company in 1862, has given the highest satisfaction, and never required the slightest alteration or adjustment since its completion.

Mr. John Vickary. (Signed) PETER ADAMS, Chairman.

The late Mr. Vickary also erected a 100-foot Gasholder and Cast-Iron Tank at **Exeter;** an 80-foot Telescope Gasholder and Iron Tank at **Devonport;** a 90-foot at **Torquay,** &c., &c. At either of these works satisfactory references can be made.

C. A. S. V. begs particular attention to her **Improved Gas-Meters,** both **Wet and Dry,** the materials and workmanship of which are guaranteed of the very best description, and which have gained for her Meters so excellent a reputation.

RETORTS, DIP & ASCENSION PIPES, HYDRAULIC MAIN, CONDENSERS, PURIFIERS, STATION-METERS, GOVERNORS, VALVES, and GASHOLDERS,

Of any size, and every description of article required in Gas-Works supplied.

Mains, Tees, Connexions, and Syphons, from 2 to 12 in., always in stock, and supplied at Scotch prices.

Clay Retorts and Fire-Goods of every description.

Chandeliers and Gas-Fittings of the most modern designs.

Iron Pipe and Fittings, Service Cocks, &c.

Plans, Specifications, and Estimates for the Erection of New Gas-Works of any size furnished.

THE FARNLEY IRON COMPANY,

FARNLEY, near LEEDS,

In consequence of the increasing demand for their Retorts, have largely extended this branch of their Fire-Clay Works, and are now prepared to execute the most important orders, either for *home* or *export*, with great punctuality.

The Fire-Clay raised from the Farnley Estate (commonly called the Wortley bed) is unsurpassed by any other known in the district, and is peculiarly well adapted for Retorts, Gas-Ovens, and Fire-Bricks; and the F. I. Co. beg especially to invite those connected with Gas-Works, who have not yet used their Retorts, to be good enough to favour them with a trial.

The F. I. Co. generally hold in stock, for immediate supply, Fire-Bricks of every size and kind—Tiles, Sanitary Tubes, Ornamental Terra-Cotta Ware White Facing Bricks, the White, Buff and Salt-Glazed Bricks, &c., &c.

Prices, Drawings, and all other information may be obtained by applying as above, or to

MR. SUTTON, THE HULL STORES, 46½, QUEEN STREET, HULL.

WANTED, by a Respectable Man, aged 28, married, without family, a situation under a Gas Company, either as Inspector, Fitter, or Clerk. Is a good working plumber or gas-fitter, a fair accountant, and has a general knowledge of everything connected with the manufacture and distribution of coal gas.

Address G. H. J., 9, Shaftesbury Villas, Kew Road, RICHMOND, S.W.

MANAGER OF GAS-WORKS.

WANTED, a Situation, by a Person who has had fourteen years experience in the manufacture and distribution of gas. Testimonials and references given. No objection to go abroad.

Address ENGINEER, 10, Cable Street, SOUTHPORT.

WANTED, by the Advertiser, aged 21, a situation as Meter Inspector, Sub-Inspector, or Coke Clerk, &c. Four years experience. Good testimonials. Salary moderate.

Address LESSER, Gas-Works, Pewsey, WILTS.

ASSISTANT GAS MANAGER.

WANTED, an Assistant Manager at the gas-works of the Rochdale Corporation; salary £125 per annum. He must be thoroughly acquainted with, and have had experience in, the making of gas, and the laying of mains and service pipes at extensive gas-works.

Applications, with testimonials, to be sent to me on or before the 23rd of February inst.

By order, ZACH. MELLOR, Town-Clerk.

Rochdale, Feb. 11, 1869.

TO GAS COMPANIES & OTHERS.

WANTED, by the Advertiser, a situation as a METER INSPECTOR and GAS-FITTER, or other similar employment. Aged 30. Can give first-class references.

Address J. D., care of Mr. A. H. Wood, Gas Engineer, HASTINGS.

WANTED, by the Advertiser, a situation as MANAGER of a gas-work. Is a thoroughly practical man in all the duties performed in such an office, the setting and working of retorts, steam-engine and exhauster, &c. Good references.

Address F. W. B., 13, Finsbury Market, East Street, LONDON.

BIRKENHEAD GAS AND WATER.

WANTED, a competent Person as BOOK-KEEPER and MANAGER of the Trade Department. Salary £200 per annum. No one need apply who is not conversant with office work connected with gas or water companies.

Applications, stating age and with names of referees, addressed to the "Chairman of the Gas and Water Committee, Commissioners Offices, 35, Hamilton Square, Birkenhead," to be sent in on or before Thursday, the 25th inst.—By order,

AMBROSE WALN,
Clerk of the Commissioners.

Commissioners Offices, Birkenhead,
Feb. 13, 1869.

Testimonials not required with the applications.

TO GAS COMPANIES.

A thoroughly competent and practical Man desires a re-engagement as MANAGER of gas-works. Twenty years experience in every department of gas manufacture and distribution. Salary no object.

Address K. B., 52, Old Bailey, CITY.

THE Advertiser, who has just left his situation, where he has been three years and four months, as Working Manager, requires a RE-ENGAGEMENT. Understands smithing, fitting, main-laying, and all that is required. Married. Aged 30. No objection to go abroad.

Address W. ESTING, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

SURREY CONSUMERS GAS COMPANY.

NOTICE is hereby given that the HALF-YEARLY ORDINARY GENERAL MEETING of the SHAREHOLDERS of this Company will be held at the Bridge House Hotel, London Bridge, on THURSDAY, the 8th day of April next, at Three o'clock in the afternoon precisely, to receive the Directors Report for the half year ending the 31st of December last, to declare a Dividend, and to elect two Directors in the room of Mr. Henry Blake and Mr. William Black, who offer themselves for re-election, and of one Auditor in the room of Mr. N. J. Powell, who also offers himself for re-election.

The Books for the Transfer of Shares will be closed on Saturday, the 27th of March, until the day of Meeting.

W. P. BODDY, Secretary.

Rotherhithe, Feb. 9, 1869.

BROMLEY GAS CONSUMERS COMPANY.

NOTICE is hereby given, that the YEARLY ORDINARY GENERAL MEETING of the SHAREHOLDERS of this Company will be held at the Bell Hotel, Bromley, Kent, on THURSDAY, the 25th inst., to receive the Report of the Directors and Balance-Sheet approved by the Auditors, to declare a Dividend, and for general business.

The Chair will be taken at Seven o'clock precisely.

By order,
GEORGE H. OSBORN, Secretary & Manager.

Offices, Brick-kiln Lane, Bromley, Kent,
Feb. 6, 1869.

EAST BARNET GAS AND WATER COMPANY.

(Incorporated by Act of Parliament.)

OFFICES—ALBERT ROAD, EAST BARNET, HERTS.

NOTICE is hereby given that the SIXTH HALF-YEARLY GENERAL MEETING of the PROPRIETORS of the Company will be held at the London Tavern, on FRIDAY, the 26th day of February, 1869, at Two o'clock p.m.

Business—To receive the Directors Report and Statement, and to declare a Dividend.

By order,
Feb. 9, 1869. WM. C. HUMPHRYS, Secretary.

The Transfer Books will be closed from the 19th to the 26th inst. inclusive.

PURIFIERS TO BE SOLD.

A Set of Four Cast-Iron Purifiers, 10 ft. by 5 ft., with wrought-iron lids, cast-iron centre-valve, and 8-in. connexions complete. These Purifiers are to be sold in consequence of recent enlargement of the works.

For particulars address the SECRETARIES, the Gas-Works, LEAMINGTON PRIORS.

GASHOLDER FOR SALE.

THE Worcester Gas Company, to make room for alterations in their works, OFFER for SALE, at £105, as it stands, a Three-Lift GASHOLDER, about 48 ft. in diameter by about 36 ft. working height, including nine pillars and their girders and trussings, tank and pillar-guides, brackets and bracket rollers, chains and counterbalance weights, centre tube and guide-rod, complete and in working order.

The Gasholder can be seen on the Company's works, and further information obtained from Mr. J. DEAKES, Manager, on the works; or from Mr. W. ESSON, Engineer, Ness House, Cheltenham.

Gas-Works, Worcester, Feb. 2, 1869.

GAS EXHAUSTER by Beale for Sale, with or without a suitable 8-in. square-way inlet and outlet sluice. The Exhauster was purchased in 1864, but it has never been used, and will be sold considerably under cost price, not being large enough for present requirements. Made to pass 30,000 feet of gas per hour.

For particulars apply to GEORGE HELPS, Secretary.

Gas-Works, Bath, Feb., 1869.

THE Directors of the Phœnix Gas- light and Coke Company will meet on Wednesday, the 17th proximo, at Two o'clock, to receive TENDERS for the supply, on charter, of a STEAM VESSEL or VESSELS to bring up from the Tyne or Sunderland, and deliver direct from the Vessel alongside the Company's premises at Greenwich, Bankside, or Vauxhall, cargoes of not less than 500 tons of Coal net.

Full particulars can be obtained by application to the ENGINEER of the Company.

70, Bankside, London, Feb. 15, 1869.

FOR SALE, One Share in the Gas- Meter Company, Limited.

Apply to A. R. T., Post-Office, HIGH WYCOMBE, stating address and profession.

THE Directors of the Wolverhampton Gas Company have FOR SALE, in good condition, a modern and complete set of Four PURIFIERS, 10 ft. square, with wrought-iron covers and sieves, hydraulic centre-valve, connecting-pipes, and lifting apparatus.

For further particulars apply to JOHN ANNAN, Engineer, Gas-Works, WOLVERHAMPTON.

Feb. 11, 1869.

THE Directors of the Aberdare Gas Company are prepared to receive TENDERS for a New (or, provided it is in good condition, a Second-Hand) GASHOLDER, from 60 to 70 ft. diameter, and from 20 to 23 feet high, with an Iron Tank.

Tenders to be forwarded, at once, to the Company's Office, 22, Canon Street, ABERDARE.

GAS TAR.

THE Directors of the Gravesend and Milton Gaslight Company are ready to receive TENDERS for the purchase of their surplus TAR and AMMONIACAL LIQUOR, for One year or Three years (at the option of the Directors) from the 25th day of March next. The quantity of Tar will be about 40,000 gallons, and the quantity of Liquor about 50,000 gallons per annum. The Company will load into the Contractor's barges.

Any further particulars may be obtained on application at the works at Gravesend.

Tenders, marked "Tender for Tar, &c.," to be sent to our Office, 4, Edwin Street, Gravesend, on or before the 3rd day of March next.

SOUTHGATE AND SON, Secretaries.

Gravesend, Feb. 11, 1869.

SURREY CONSUMERS GAS COMPANY.

THE Directors of this Company are prepared to receive TENDERS for the COAL TAR produced at these works. Particulars as to quantity and delivery may be obtained on application to the ENGINEER, at the Works, ROTHERHITHE.

Sealed tenders to be sent, addressed to the Secretary, not later than Wednesday, Feb. 24 inst.

ANDREW HARDY & SON,

RETORT SETTERS,

Beg to inform Engineers, Managers, and Gas Companies in general of their CHANGE OF RESIDENCE from Waterloo Road, Uxbridge Moor, to OLD CROWN GARDENS, UXBRIDGE, MIDDLESEX.

ADDISON POTTER,

WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,

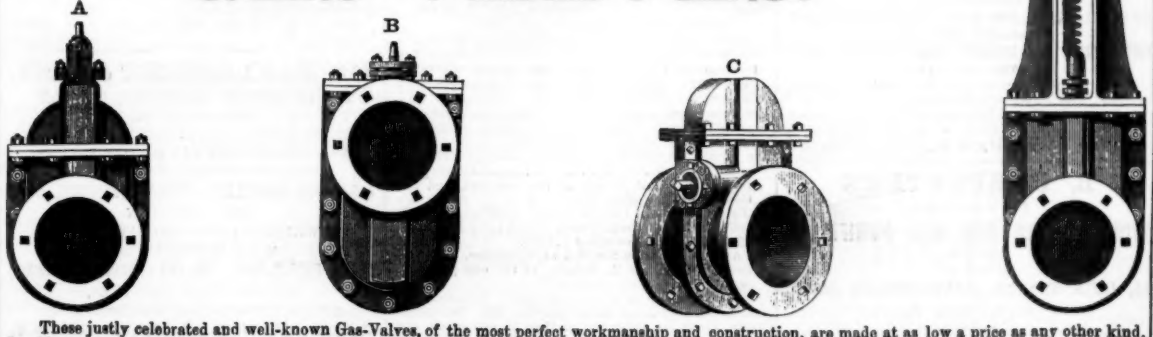
Manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay Good

Mr. H. GORE,

CONSULTING GAS ENGINEER,

20, ALFRED PLACE, BEDFORD SQUARE, LONDON, W.C.

C. & W. WALKERS' GAS-VALVES.



These justly celebrated and well-known Gas-Valves, of the most perfect workmanship and construction, are made at as low a price as any other kind. A—Above-ground Screw Gas-Valve, with improved indicator to show when open and shut, is the best Valve for Purifiers where the most perfect tightness is required, and for heavy pressure generally. B—Under-ground Screw Gas-Valve. C—Internal Rack Gas-Valve, with pinions of homogeneous metal. D—Ordinary Rack and Pinion Valve, with strong undamageable racks and pinions.

MIDLAND IRON-WORKS, DONNINGTON, NEAR NEWPORT, SHROPSHIRE,
AND 8, FINSBURY CIRCUS, LONDON, E.C.

CATHELS'S Patent Dry District GOVERNOR is the only perfect self-acting contrivance for regulating the pressures in the higher levels of a district.

CATHELS'S Patent Four-way Disc GAS-VALVE—ONE OF WHICH SERVES AS THREE ORDINARY VALVES—is the best Valve for gas-works.
For prices, &c., apply to the Manufacturers, Messrs. GURST AND CHRIMES, ROTHERHAM.

CATHELS'S Patent Ribbed Gas Main- PIPES cost but about 1d. to 2d. per yard (depending on the size) more than Plain Pipes, and ensure PERFECT GAS-TIGHT CONNEXIONS with the Service-Pipes.
Apply to Messrs. BIGGS & SON, 37, Southampton Street, Strand, LONDON.

BELGIAN CLAY RETORTS.

J. SUGG and CO., late ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.
Communications, addressed to J. SUGG and Co., GHENT, will receive immediate attention.

ROBERT MACLAREN and CO., EGLINTON FOUNDRY, GLASGOW, Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

TO GAS ENGINEERS AND FITTERS.

Every Description of
GAS LANTERNS & REFLECTOR LAMPS
For Shop Windows kept in Stock.
W. DAVIS, 17, Wells Street, Oxford Street, LONDON, W.
Established 1830.

TWENTY YEARS PRACTICAL EXPERIENCE.

EDWIN BENTLEY,
RETORT SETTER,
29, LOWER HOPE STREET, HALIFAX,
YORKSHIRE.
Fire-Clay and Iron Retorts, Double and Single Grooved Brick Retorts, of every description.
Bentley's Improved D Brick Segment Retorts, 5 or 3 in one bed.
Testimonials and references on application.

W. J. SIMMONDS,
Retort and Boiler Setter and Contractor for Gas-Works in general,
72, SOUTH STREET, NEW NORTH ROAD,
ISLINGTON, LONDON, N.
Upwards of 16 years Retort Setter to the Chartered Gas Company, Brick Lane and Curtain Road Stations.
Materials supplied on reasonable terms if required, or labour only.
No connexion with any other Retort Setter.
N.B.—Orders to be addressed as above.

F. SIMMONDS, Senr.,
221, KINGSLAND ROAD,
RETORT & BOILER SETTER
For the Chartered Gaslight Company, Brick Lane and Curtain Road Stations, and numerous Gaslight Companies, London and Provincial.
NO CONNEXION WITH ANY OTHER RETORT SETTER.
Estimates given with or without materials.

HARRIS AND PEARSON,
STOURBRIDGE.
PROPRIETORS OF
BEST GLASS-HOUSE POT & CRUCIBLE CLAY.
MANUFACTURERS OF
FIRE-BRICKS, GAS-RETORTS, AND FIRE-CLAY GOODS
OF EVERY DESCRIPTION.
Orders of any magnitude, for home and exportation, executed with all possible despatch.
N.B.—A quantity of Retorts in stock.
Circulars, 15 in. and 16 in. Ovals, 20 in. by 14 in.
D's, 15×13, 16×12, 18×14, 20×16, 21×14, 24×14.

B. CARPENTER'S
IMPROVED
WOOD SIEVES FOR GAS PURIFIERS.
WORKS:
14, JOHN STREET, PENTONVILLE ROAD,
LONDON, N.
The above Sieves are used by the principal Gas Companies in London and the country. Their utility, durability, and cheapness combined, render them superior to all others.
Testimonials from Gas Engineers who have tested their qualities forwarded on application.
All orders punctually attended to, and estimates given if required.

THE
NICTHEROY (BRAZIL)
GAS COMPANY,
LIMITED,
PROVINCE of RIO DE JANEIRO.
INCORPORATED UNDER THE COMPANIES ACTS, 1862 & 1867.

CAPITAL—
£75,000, in 7500 Shares of £10 each.

Only 3000 Shares are offered to the public; 2500 having been already subscribed for, and 1500 being reserved for allotment in Brazil by special request; the remaining 500 not being required to be subscribed.
£1 to be paid on application and £1 on allotment. Interest payable at 6 per cent. per annum during construction.

DIRECTORS.
(With power to add to their number.)
Chairman—John Wilson Croker Pennell, Esq., 1, Powis Square, Kensington Park, late of Rio de Janeiro.
Edward Gotto, Esq., C.E., Great George Street, Westminster, and Hampstead.
Joseph L. Montefiore, Esq., 52, Kensington Gardens Square, late of Rio de Janeiro.
BANKERS—The Imperial Bank, Limited, Lothbury, and Westminster.
AGENTS—Messrs. J. Bramley-Moore, and Co., Liverpool, and Rio de Janeiro.
BROKERS—Messrs. Crosley, Brothers, and Co., 3, Royal Exchange Buildings.
AUDITORS—Messrs. Elkin, Goetz, and Co., Public Accountants, 7, Westminster Chambers, Victoria Street.
SOLICITORS—Messrs. Cobb and Southey, 4, Westminster Chambers, Victoria Street.
REGISTERED OFFICES.
7, Westminster Chambers, Victoria Street, S.W.

ABRIDGED PROSPECTUS.
This Company is formed for lighting by Gas the City of Nictheroy, province of Rio de Janeiro, in accordance with a concession granted to Captain Braga, conferring an exclusive privilege for 20 years, to be renewed unless the Government purchase the property at a value to be determined by arbitration.
Nictheroy is the capital of the province of Rio de Janeiro, has a population of 40,000, and contains 3311 houses. It is situated in the Bay of Rio de Janeiro, opposite the city of that name.
The conditions of the concession are similar to those of the "Rio de Janeiro Gas Company, Limited," which has steadily returned 20 per cent. to the holders of original Shares.
"All payments to the Company are to be made at a rate equivalent to gold, by which loss of revenue depending upon fluctuation of exchange is avoided. The price is 22s. 6d. per 1000 feet for private consumption, and £10 16s. per annum is the maximum for each public lamp.
"The advantage of investments in enterprises of this kind consists in their entire freedom from any mercantile risk.
"It is estimated that the income from the first stipulated 500 public lamps, and a small proportion of the private houses, will yield a dividend of 10 per cent. per annum, and that when the lamps are placed at distances similar to those in Rio, which is fully anticipated, the dividends will exceed 18 per cent. per annum."
The estimates have been prepared by Mr. Charles Neate, M. Inst. C.E., who has had long experience in Brazil, and have been submitted to Mr. B. James (14 years at the head of the management of the Rio Gas Company), whose opinion follows:—
"*Rio Gas Company, London, Oct.* 24, 1867.
"Dear Sir,—I have examined with great care the estimates and calculations for the proposed Gas-Works at Nictheroy, which you submitted to me, and have no hesitation in saying that I consider them perfectly reliable and safe.
"I have no doubt that your proposed capital is sufficient for the purpose, and that the works will yield the return on which you calculate.
"It is quite clear that the number of public lamps stipulated in the concession is totally inadequate to the wants of the City of Nictheroy; even double the quantity would be insufficient, and I feel pretty certain that the inhabitants will very soon, and very forcibly, express the same opinion.—I am, dear Sir, yours very faithfully, (Signed) "B. JAMES.
"To Charles Neate, Esq., M. Inst. C.E."
The Company has been duly registered in Brazil as a Société Anonyme, and a plot of land for the works has been purchased at £1500 under the original estimate.
The only contracts entered into by or on behalf of the Company, are the following:—
An Agreement, dated the 21st of December, 1867, and made between Captain S. A. R. Braga, of the one part, and the Company of the other part.
An Agreement, dated the 7th of January, 1869, and made between Joseph L. Montefiore, as attorney for Captain S. A. R. Braga, of the one part, and the Company of the other part.
A Letter from Mr. Charles Neate, dated October 23, 1868, the terms of which were agreed to by resolution of the Board on November 6, 1868.
An Agreement, dated the 23rd of December, 1868, and made between Mr. A. Bulman, of the one part, and the Company on the other part.
These, and Copies of the Concession, Memorandum and Articles of Association, together with the subsequent grant for extension of time to commence and complete the works, can be seen at the Registered Offices of the Company.
Applications for Shares will be received by the Brokers, Messrs. CROSLEY, BROTHERS, & Co., 3, ROYAL EXCHANGE BUILDINGS, by the IMPERIAL BANK, and by the SECRETARY at the Registered Offices of the Company, where Prospectuses and Forms of Application can be had.

NEW BARNET GAS-WORKS,
Near the Railway Station.
MR. EDWARD TEWSON
WILL
SELL BY AUCTION,
By order of the Directors of the New Barnet Gas and Water Company, on the Premises,
On Friday, the 5th of March, 1869,
At ONE o'clock prompt, a quantity of
SURPLUS MACHINERY and MATERIALS, VAN and BROUGHAM, &c.,
COMPRISING
A 4-horse power Portable Steam-Engine, with feed pump;
Two 5-ft. Dry-Lime Gas Purifiers, with sieves, 4-in. connexion-valves, and a travelling crane, as fitted;
A Coffee and Redwood's Apparatus for the manufacture of Sulphate of Ammonia;
Hydraulic Main and Pipe;
Connexions for 15 retorts, with vertical condenser;
One Washer;
Four cast-iron Furnace Doors and Frames;
Nine cast-iron Retort Mouthpieces, 15-in.;
A quantity of old wrought Gas Piping;
Several tons of old Cast Iron;
Eight wrought T iron Retort Binders;
D and round Mouthpieces;
A cast-iron Retort;
Two large 15-in. Iron Columns, 14 ft. and 11 ft. long;
A small Gas Purifier;
A 4-wheeled Van, on steel springs;
Useful Brougham, and Sets of Harness;
One Thousand yards of good Burnt Ballast;
Ten tons of Slack;
Three Thousand Polling Boards;
Two Windlasses;
Two Pumps, and other useful Sets.
Catalogues seven days before the Sale at the Works, and of the AUCTIONEER, New Barnet, HERTS.

TAR PURCHASED,
In Districts contiguous to the Advertisers Works.
Superior Quick-Drying Black Varnish for every description of Ironwork. Sold in barrels of about 32 gallons. Delivered free to any station in England at 1s. 2d. per gallon, cask included.

JOHN CLARKSON MAJOR,
TAR DISTILLER AND MANUFACTURING CHEMIST,
WOLVERHAMPTON.
BRANCH WORKS AT
NOTTINGHAM, CAMBRIDGE, & BRIGHTON.

FREDERICK HOPE,
Gas and Consulting Engineer,
HIGH STREET, HOUNSLOW,
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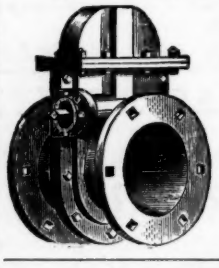

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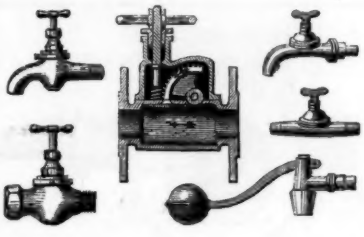

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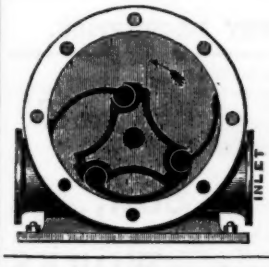

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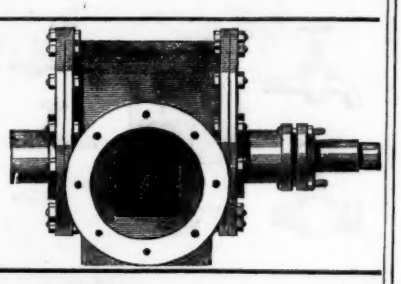

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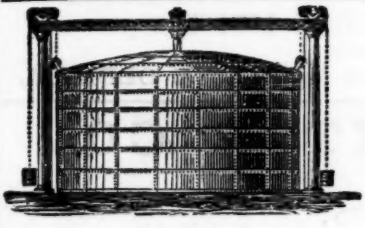

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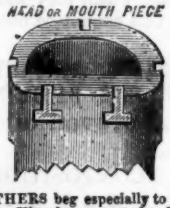

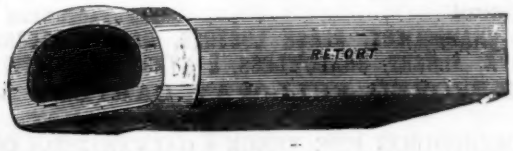

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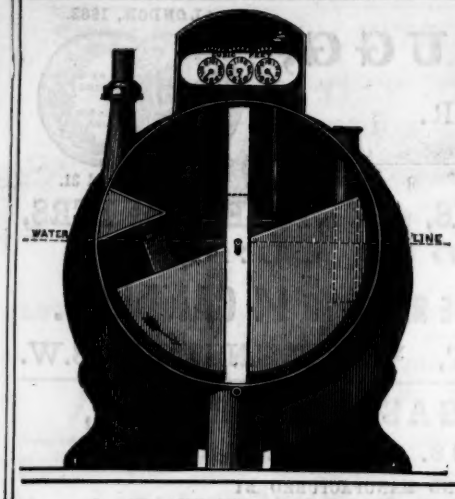

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